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THE IRON AGE

Editorial Index, Page 43

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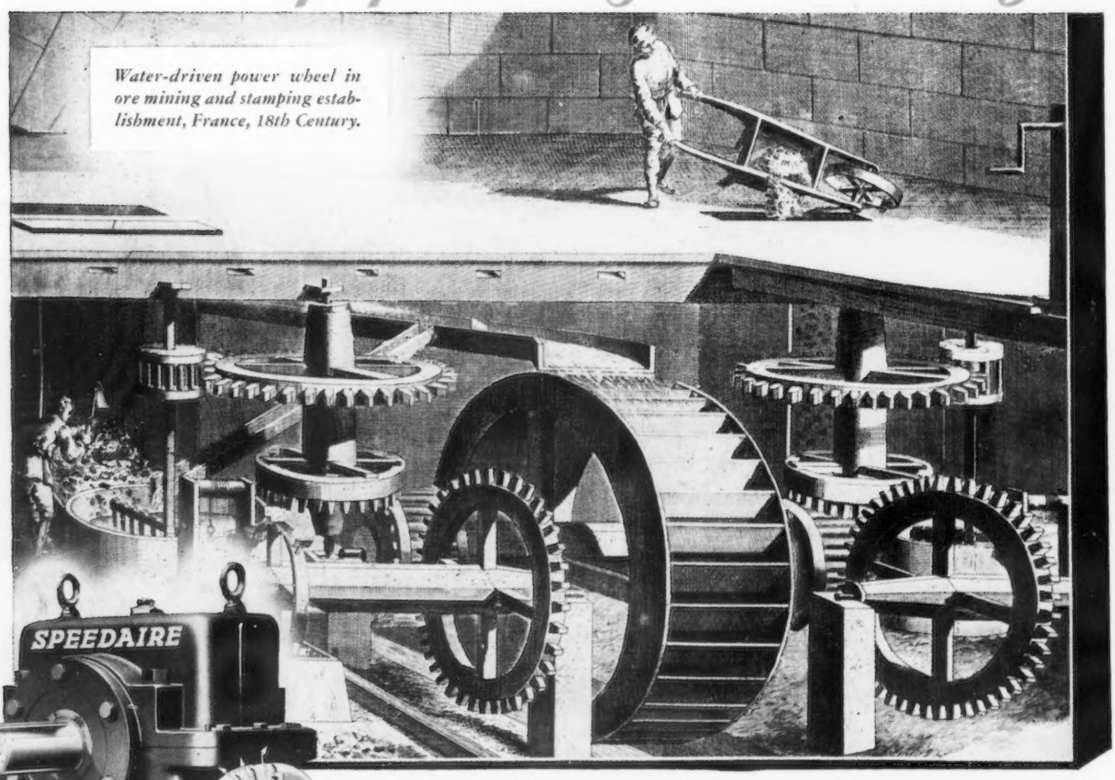

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IRON AGE

Vol. 157, No. 16 April 18, 1946

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Indexed in the Industrial Arts Index. Published every Thursday. Subscription Price North America, South America and U. S. Possessions, $8; Foreign, $15 per year. Single Copy, 35 cents. Annual Review Number $2.00.

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Cable Address, "Ironage" N. Y.

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Horseshoe Nails and the Foundry

NEVER discount little things. Many a man has choked to death on a tiny fish bone. And a war was lost, so legend tells us, because of the lack of a horseshoe nail.

Today, one of the choke points of industrial reconversion is the foundry industry. Building contractors cannot get enough radiators to heat homes to be built for returning veterans, nor bathtubs for cleansing them from the grime of domestic toil, nor can machinery builders get the necessary castings to make machines to create jobs for them.

It is quite true that pig iron is in tight supply, as well as is foundry labor. But tightness is not uncommon even with butter or nylons in these days of short supply, long demand and man-made regulations. A choke point is different from mere tightness; it is something that makes tightness tighter.

In the business of making iron castings, lumber is an immediate choke point factor. One does not ordinarily think of iron castings being made of wood, but most of them are. You have to have the pattern before you can have the casting.

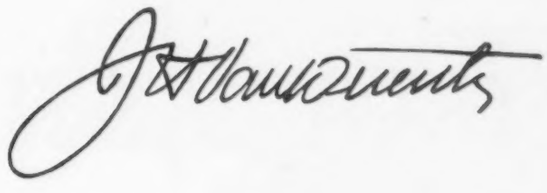
To make the patterns from which to make castings, the pattern shops of America require an estimated annual 33 million board ft of pine. Measured as a percentage of the total lumber supply, this is approximately one tenth of 1 pct; an insignificant amount. But try to get it.

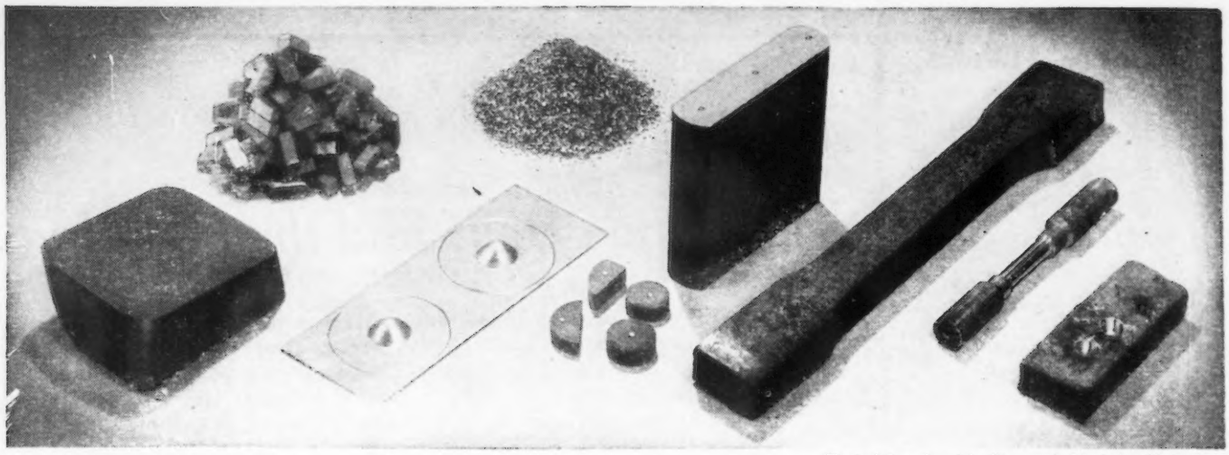
One of the largest of our pattern manufacturers, for example, recently sent a representative on a month's trip during which he contacted every known mill in the states of California, Washington and Oregon, attempting to corral a supply of pattern lumber. The total amount secured from this intensive combing of our most productive lumber areas was less than 100,000 board ft; a mere drop in the bucket.

You cannot have reconversion of industry and new machines without castings. Neither can you have low-cost homes without cast iron for soil pipes, radiators, bathtubs and many other cast iron items. Here indeed is a choke point that deserves immediate attention unless we are looking for future trouble in addition to our present ones.

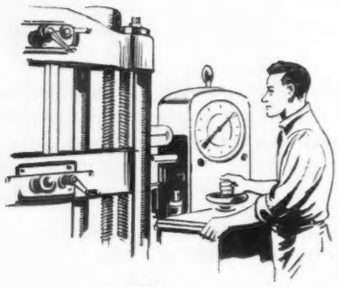
Granted that lumber is in short supply and that a large part of it must be allocated to low-cost housing, there should be good judgment exercised if we expect to get houses at all. It is as senseless to expect to make houses without cast iron auxiliaries as it is to figure on making them without windows or doors.

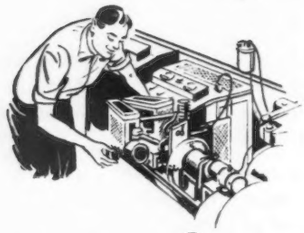
But that is only part of the story. Castings enter into the making of nylon hose, cotton shirts, electric refrigerators and ranges, automobiles and trucks and indeed all of the consumer products that require capital equipment in their manufacture. Thus the foundry choke point is not a one industry bottleneck but a universal one. And when an allocation of but one tenth of 1 pct of our lumber supply to pattern shops will go far to cure this threat of construction and manufacturing bogdown, it surely deserves attention and action by the allocators.





Typical Samples of the Thousands Checked to Maintain Quality and Uniformity in Inland Steels





Hundreds of Tons of Samples are Tested Yearly

Making steel, the basic material of our modern world, is no simple process — nor is it one of small responsibility. For in making steel thousands of requirements must be satisfied, many involving consideration for human life as well as the reputation of designers, fabricators and builders of equipment. Operations of such consequence call for constant checks and rigid testing — ruling out all guesswork.

In the course of a single year hundreds of tons of steel samples undergo chemical, tensile, metallographic, etch and other tests at Inland. Chemical analyses alone run well over a thousand tons. These precautions are taken to furnish a uniformity and quality in steel that will fully measure up to every requirement.

For the benefit of steel users, Inland maintains a large specialized staff of engineers and metallurgists who will gladly cooperate with you in the selection and use of steels — without obligation.

Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill. Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul. Principal Products: Bars • Structurals • Plates • Sheets • Strip • Tin Plate • Floor Plate • Piling • Reinforcing Bars • Rails • Track Accessories.

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► To protect some 2700 combatant and noncombatant vessels, from rust and corrosion the Navy has begun a $70 million program. Protective paints, plastic moisture barriers and dehumidifiers are being used to preserve the fleet in a state of readiness.

This deactivation and decommissioning program was so planned that a vessel may be reactivated in about 10 days, a decommissioned ship can be placed in service after 30 days.

► Wholesale buyers are watching the sharp competition between galvanized and aluminum roofing from a price standpoint. Some are willing to bet that aluminum will give galvanized a good run for its money even when the latter is more freely available provided the price differential is not too great.

Steel company promotion on galvanized items, incidentally, is coming in for some criticism from merchandising departments. They claim that steel companies are so intent on selling the superiority of their own particular method of galvanizing that they have forgotten to emphasize what the material can do for the customer.

► The first British turbine-propelled air liner, Bristol Brabazon, will have a loaded weight of 110 tons and will be a successor to the conventional airplane of the same name. The first airplane will have eight 2400-hp Centaurus engines, but the second will use gas turbines to drive its propellers.

A similar flying boat development is the Saunders-Roe 100-ton boat to be fitted with six turbines. Three of the latter are on order. The Brabazon class is not expected in service before 1950.

► Jowett, British light car builders, have decided to abandon hand production methods and are planning on the large scale production of a new model making important use of light alloys.

It will retain the horizontally opposed engine design for which the firm is known, and is scheduled for quantity production late this year.

► Britain's unemployment as of the end of February is estimated at about 300,000, after 5,000,000 people have been transferred from war to peace jobs since September.

Despite an increase from 100,000 to three times that, the February figure is the lowest peacetime average since 1913.

► From explorations in the field of fluoroscopy of light-alloy castings, it has been found that defects which communicate with the surface near the region of maximum stress contribute more to failure than any other type of defect.

In comparing radiographic and fluoroscopic results, tests indicate that defects that cannot be detected fluoroscopically have a negligible effect upon the strength of the casting.

► Potassium tartrate and potassium hydroxide are being used as a preferential rust solvent for qualitative and quantitative determinations of rust in the presence of steel. Solubility of the steel in this solvent is 0.1 mg per cc at 68° F.

► Metalite, a new structural material consisting of thin sheets of high strength aluminum alloy separated by a thick low density core of balsa wood, has been announced by Chance Vought Aircraft Div. Although originally designed for aircraft, its uses may be enlarged to include radios, refrigerators, washing machines and even prefabricated housing.

► Current research on magnesium alloys may reveal new potentialities for this material. Several laboratories have produced small quantities of experimental magnesium alloys with properties which on a strength-weight basis are superior to the highest strength commercial aluminum alloys.

Through this work it is hoped that such desirable features as the ability to be severely cold-worked and the attainment of maximum strengths through precipitation hardening may some day become commercially feasible with magnesium.

► The Germans successfully developed a recoil fluid for use in low temperatures by adding a sulfonamide of low molecular weight to the regularly used mixture of triglycol, ethylene glycol and water.

► First orders for British gas-turbine engines have recently been placed by Sweden.

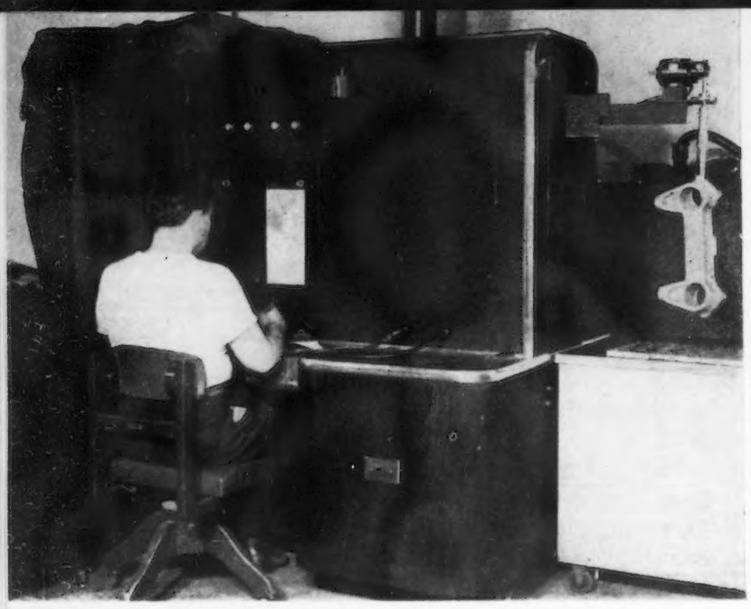

FIG. 1—Fluoroscopic unit in operation. Note casting suspended on shuttle arrangement to right.

Fluoroscopy of

By B. CASSEN and D. S. CLARK

Research Engineer and Associate Professor of Mechanical Engineering, respectively, California Institute of Technology

ONE of the most important factors in the inspection of castings by radiography or fluoroscopy is a knowledge of the significance of the observed defects in regard to the strength characteristics of the part being examined. The basis for acceptance or rejection must be a rational one. To establish the size and character of a defect that will or will not reduce the strength of a given casting is not simple. The number, distribution and character of defects are so widely diversified in even one type of casting that the problem becomes very complex.

In most respects the present basis for the rejection of castings by radiography is not strictly rational. It is founded upon the judgment and experience of those concerned with the use of the individual castings and upon the results of a few tests. With the demonstration[1] that the fluoroscopic method of inspection is adaptable to the detection of certain types and sizes of defects within certain limitations of thickness, the question arises: Are the defects which can be seen in the radiograph, but are too small to be seen fluoroscopically, contributory to decreased strength of the casting? Some attempts have been made to obtain a correlation between the presence or absence of defects, as determined radiographically, and the strength of a given casting. It appears that the study must be carried further on more of a statistical basis.

As an exploratory measure, approximately 500 pieces of a given casting were obtained for investigation. Of these 500 castings, approximately 400 had been radiographically rejected by the consumer's inspector. The other 100 castings had been radiographically accepted. These castings were again radiographed by a commercial X ray laboratory, fluorscopically examined, and statically tested in a universal testing machine. From these tests it was found that the average strength of the castings which were accepted on the basis of commercial radiography was not greater than the average strength of the rejected castings. It was apparent that very large defects had some effect in reducing the strength of the part. It was particularly noted that the variation in the strength of the accepted casting was in general as great as that observed in the rejected casting. This variation may well be associated with the variation in the strength of the material itself. It was further observed that defects which communicate with the surface near the region of maximum stress contributed more to failure than any other type of defect.

This preliminary work was carried out on some additional castings, although in not quite such large numbers. In general the results were about the same, and it was concluded, as a first approximation, that defects which could not be detected fluoroscopically had a negligible effect upon the strength of the casting. While these results do not give any quantitative evaluation of the significance of various types of defects, they have definitely pointed to a problem which should be investigated further.

One may pose the question: If a particular casting is radiographed independently by three different X ray laboratories, all of which are well qualified to conduct such work, will the three radiographs all reveal the same defects? To assist in obtaining an answer to this question, approximately 2000 castings were submitted in turn to three different commercial X ray laboratories. Each laboratory used its own technique in making the radiographs. All of the radiographic films produced by all of the laboratories were then read by a member of the project staff. These same castings were then inspected fluoroscopically and a record made of the examination of each casting. These results were then analyzed, defect for defect. This analysis showed that less than half of the defects detectable on the films of one of the three laboratories were detectable on the films of the other two laboratories. In other words, approximately 5000 of the total of 10,000 defects were detectable on the films of all three laboratories. Approximately this same number of defects was observed fluoroscopically.

It appears from this study that the number of defects that can be detected in an aluminum alloy with a fair degree of certainty by commercial radiography is comparable with the number that can be detected with high-brightness rotational fluoroscopy.[1]

Light-Alloy Castings

Significance of observed defect on usability of castings and use of higher X ray voltages to obtain greater screen brightness are covered in this article. Examination of steel castings at voltages from 140 kv to 200 kv is also touched upon. The data presented herewith supplement the previous report by the authors published in THE IRON AGE, Nov. 1, 1945.

With the experience cited so far, in which equipment operating at a voltage of approximately 150 kvp was employed, one may ask, if higher brightness of the screen resulted in considerable improvement in the results, why would not higher X ray voltage give considerable improvement? Certainly with thicker castings higher brightness can only be obtained by using higher voltages, thus securing greater penetration of X rays. However, it is known that at higher voltages the X ray contrast is decreased. In spite of this decrease in contrast, the increase in brightness of the screen may have a compensating effect.

To investigate the possibilities of higher voltage fluoroscopy, a fluoroscope was constructed incorporating features which were found to be desirable in the use of the earlier model. The fluoroscopic viewing unit, fig. 1, consists of a wooden frame structure mounted on heavy rubber-tired casters. The viewing window, fig. 2, a Lucite cell filled with lead perchlorate solution, is 4½ in. thick and gives a viewing area of 16 x 14 in. The fluorescent screen is mounted in an aluminum frame which can be moved toward or away from the viewing window by means of a motor.

The object under examination is hung from a support mounted on a shuttle. This shuttle, mounted on small ball-bearing wheels, runs on tracks within the cabinet. The shuttle can be driven into or out of the cabinet, bringing the object to be examined in front of the viewing window. When one end of the shuttle is outside the cabinet, the other end is in the viewing position. The cabinet is lined with lead sheet 0.25 in. thick, providing ample protection for personnel. During observation the operator may move the part being examined back and forth across the field of view. Provision is also made so that the casting can be rotated as it hangs in front of the viewing window.

The X ray tube is mounted on its tube stand and is provided with a counterbalance so that it can be moved up or down with ease. The tube port extends

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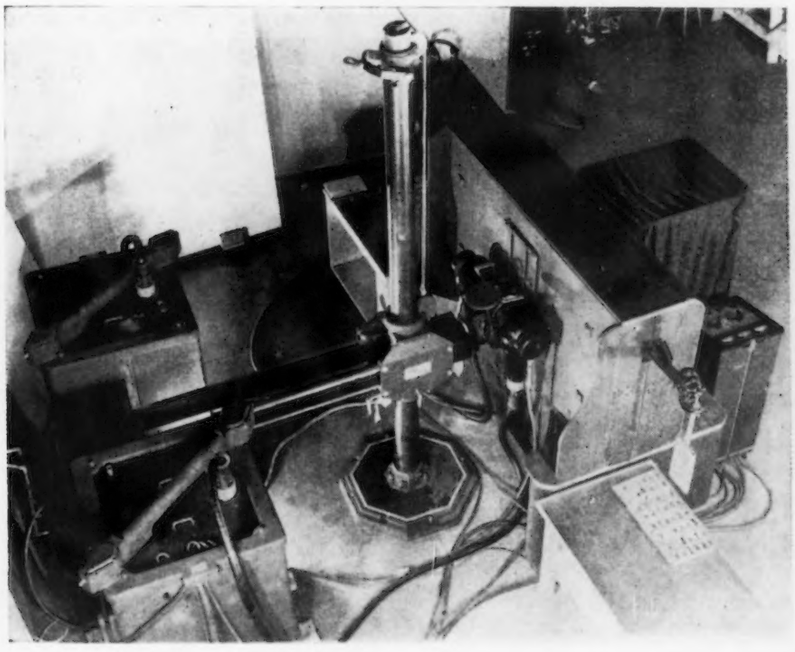


ABOVE

FIG. 3—Westinghouse 220 kv constant potential unit used in tests discussed in the article.

BELOW

FIG. 2—Viewing window consisting of a Lucite cell filled with lead perchlorate solution.

through a hole in the cabinet and protection is provided by means of suitable lead flanges. The tube can be moved up or down a distance of 4 in. from the center position by means of a motor mounted on the cabinet itself.

For the higher voltage work a 220 kv constant potential unit, fig. 3, was secured through the courtesy of the Westinghouse Electric Corp. This tube had a focal spot of approximately 5 mm. It is common practice to employ X ray equipment producing half-wave rectified voltage. However, one might expect for fluoroscopic examination that the higher output of constant potential type equipment would prove to be superior, in view of the higher screen brightness attainable. The aluminum artificial specimens referred to previously were again utilized in the evaluation of this equipment. Complete tests were made with aluminum varying in thickness from ½ to 2½ in., at voltages varying from 140 to 220 kv. In all of these tests the tube current was maintained at approximately 15 ma.

The results of these tests indicated that no particular advantage was to be gained in the detection of defects 0.050 in. or less in maximum dimension in aluminum in the range of thickness from 0.5 to 2.5 in. by using X ray tube voltages greater than approximately 150 kv. Further, it was evident that there is no particular advantage in constant potential X ray equipment over the commonly used half-wave rectified type.

In view of the greater X ray density of steel, it was believed desirable to study the performance of this equipment with samples of steel containing artificial defects. A series of samples was made in the same manner as described for aluminum.[1] Thicknesses of from 0.25 to 0.50 in. and voltages of from 140 to 200 kv were employed. The results of these tests indicated definitely that the results obtained by operating at a voltage of 200 kv were better than those obtained at 140 kv. It is therefore apparent that with higher voltages fluoroscopy of steel is possible within a certain range of thickness.

While these studies have been exploratory, they have shown that fluoroscopy can be employed for the detection of certain classes of defects which may appear to be structurally significant. There is no reason why fluoroscopy should not be used as an inspection tool, provided its limitations are recognized. The influence of defects which either can or cannot be observed fluoroscopically, or for that matter radiographically, must be determined in any event, and this leads to a very fundamental research program which it is hoped may be undertaken some time in the future.

[1] *See "Fluoroscopy of Light-Alloy Castings," by Cassen and Clark,* THE IRON AGE, *Nov. 1, 1945, p. 55.*

Chip Conveyor Uses Synthetic Rubber Disks

AFFORDING maximum flexibility, and employing for the first time in the automotive industry, the use of abrasive resisting synthetic rubber, a chip conveyor has just been installed by the Packard Motor Car Co.

Constructed by Hapman Conveyors, Inc., Detroit, in conjunction with company engineers, the new type conveyor system extends more than 5000 ft, including both forward and return lengths, through the departments machining cylinder blocks, cylinder heads and exhaust manifolds for the new Clipper models.

With the turning radius of the system's rubber flights regulated only by bending capabilities of the conducting pipes, the installation of the conveyor was adapted to machine placement.

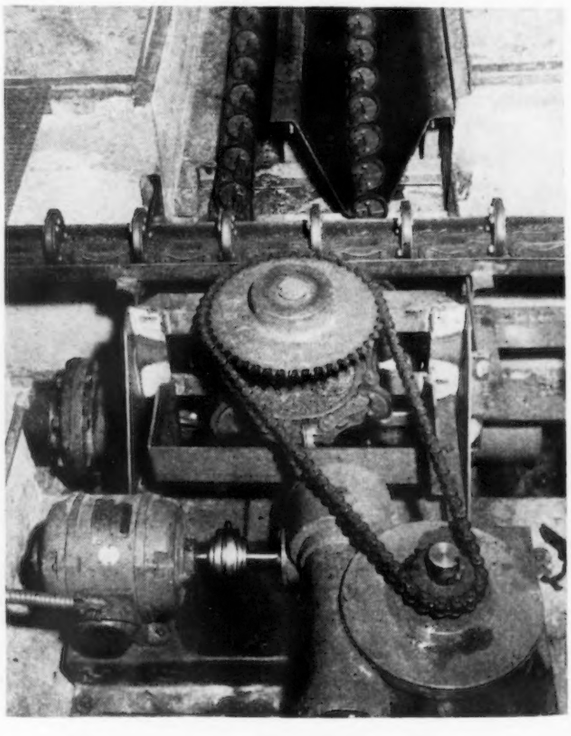
Virtually all steel chips from the 181 machines serviced by the system fall directly through the floor grating covering the conveyor trough and are moved to the briquetting plant for reprocessing. Nearly all physical handling of steel particles is eliminated because of the conveyor's flexibility.

Power for the system is supplied by 11-hp and four 3-hp motors. Conducting pipe sizes range from 4 to 8 in., depending on the volume of chips to be handled. The system includes 11 cross conveyors and 14 transfer hoppers, and a chip deposited at the farthest point from the briquetting plant will require 4½ hr to move through the system.

Packard requirements for the system called for disposal of 40 cu ft of chips per hr, but it is estimated that the capacity could be increased three times without supplementing existing facilities.

Tests on smaller models of the new system indicate that the life of the rubber forcing disks will exceed that of the conducting pipes, which can be quarter turned as wear is detected on the inside surfaces. Longer wearing qualities of the new system, it is explained, are enhanced by the use of the sealed conveyor link pins, utilizing self lubricating rubber washers.

FLOOR grating has been removed for this picture which shows a section of the return conveyor in a 6-in. open channel. The upper portion of the picture shows one of the 4-in feeder conveyor chains operating in an open trough.



Three-Wire Thread Gaging Simplified

By JOHN J. MEADOWS
Consulting Engineer, New York

Charts and tables presented herewith eliminate time-consuming calculations commonly involved when gaging male threads over three wires. Thread forms covered by this article include National Fine and National Coarse series, Whitworth standard, British Association, British Standard Fine, and French standard.

MUCH progress has been made in measuring threads since 1906 when the automobile industry first established thread standards in this country. However, most gages used for thread measurement are designed on a reference basis and can get out of order. In order to assure accuracy it is customary to check the regular gage against a standard, or where the U. S. Standard threads are involved, it may be necessary to use three wires. In any event wires are used to check the checking plugs and thread standards. The most reliable method is the three-wire method. Special screws, or machine screws which do not have standard diameters, or where quantities do not justify the existence of gages, are usually checked by the three-wire method. It is based upon a formula whose value changes with each type of thread. The formula is based upon the major thread diameter, and for 60° thread forms, is determined as indicated in fig. 1.

As illustrated, a wire or other circular object inserted between a pair of 60° threads will so contact the thread that the radius of the wire will form a right angle at point T. Thus at 30°-60° right tri-

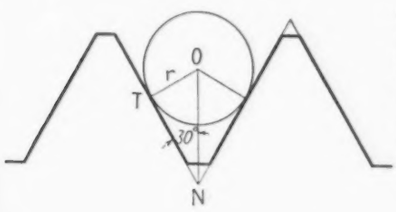


FIG. 1 — Formula for checking thread size over three wires is based on the major thread diameter. The formula for the 60° thread form is determined as shown here.

angle OTN will be formed in which $ON = 2r$. The point N is the point symbolizing the theoretical minor diameter of the thread. The actual minor diameter will be the flat at the root of the thread. The theoretical diameter is marked by the point where the extensions of the two thread faces intersect. In the National thread form this theoretical diameter is equal to $D. — 1.5155p$, where D is the major diameter of the thread and p is the pitch.

Having the outside or major diameter, the diameter over the wires will be $(D - 1.5155p) + 3d$ where d is the diameter of the wire. This can be proved by the fact that ON is equal to $2r$. Since O is the center of the wire, the distance from N to the outside of the wire will be $ON + r = 3r$. The illustration, fig. 1, shows only one side of the thread; on the opposite side of the screw there is a duplicate situation which must be considered in determining the distance over the wires. Thus $3r$ becomes $3d$, thereby proving the formula $M = D — 1.5155p + 3d$ where M is the micrometer reading over the wires. The formulas used for different threads are as follows:

Thread	Formula
U. S. Standard	$M = D — 1.5155p + 3d$
Whitworth	$M = D — 1.6008p + 3.1657d$
British Association	$M = D — 1.7363p + 3.4829d$
Lowenherz	$M = D — 1.75p + 3.2359d$
Sharp V	$M = D — 1.732p + 3d$

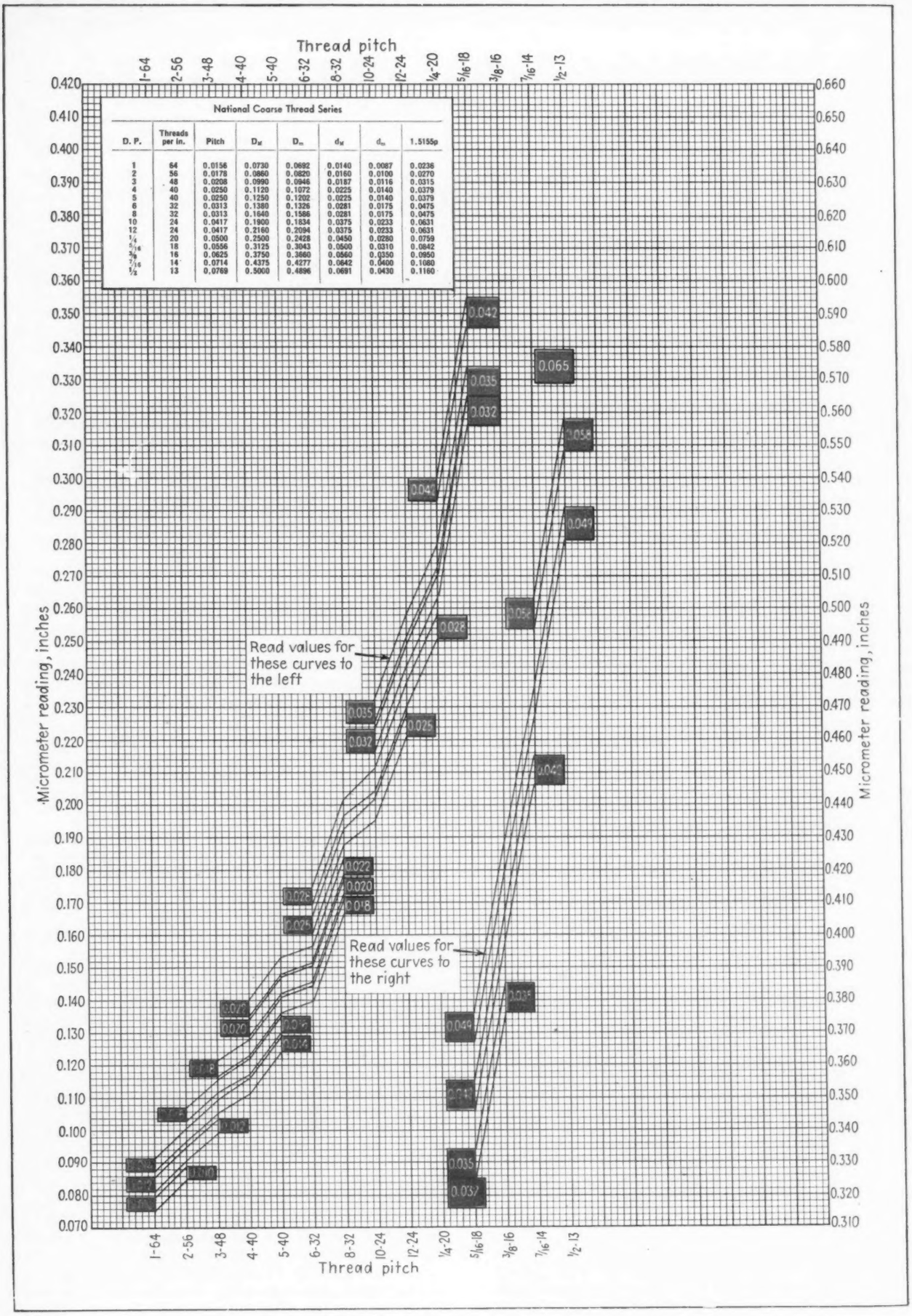
In most plants where the three-wire measuring system is employed there is an inclination to disregard the tabulation of results. Many hours of valuable time have been wasted by having operators compute each reading as it is taken. Not only does this introduce the possibility of errors, but there is an inexcusable loss of time in the process.

The accompanying charts are designed to eliminate these disadvantages. These charts are based on the tables that are given below the graphs, and these tables in turn are based on the formulas given above. In the tables D_M is the basic major diameter and D_m is the minimum major diameter. The maximum permissible wire size is d_M and the minimum permissible wire size is d_m. For the U. S. Standard thread d_M is equal to $0.9p$, and d_m is equal to $0.56p$. The pitch line wire size is $0.577p$.

How to Use the Charts

Locate, on the bottom horizontal scale, the value corresponding to the nominal size of the thread to be checked. Follow this value vertically to its intersection with the curve representing the size of wire used. The value at this intersection is read on the vertical scale. It will be noted that some of the curves

(Continued on page 57)

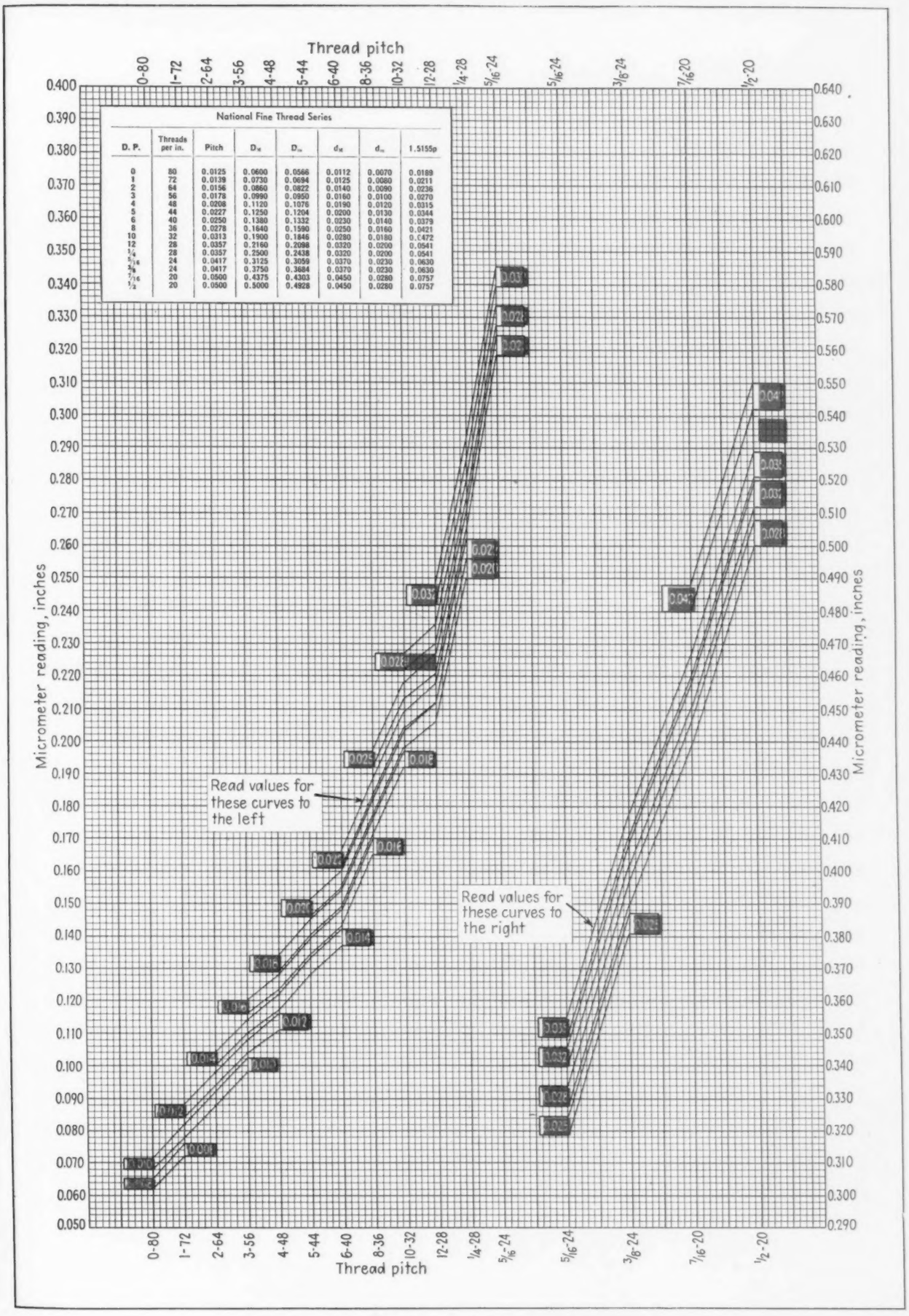


National Coarse Thread Series

D. P.	Threads per in.	Pitch	D_M	D_m	d_M	d_m	1.5155p
1	64	0.0156	0.0730	0.0692	0.0140	0.0087	0.0236
2	56	0.0178	0.0860	0.0820	0.0160	0.0100	0.0270
3	48	0.0208	0.0990	0.0946	0.0187	0.0116	0.0315
4	40	0.0250	0.1120	0.1072	0.0225	0.0140	0.0379
5	40	0.0250	0.1250	0.1202	0.0225	0.0140	0.0379
6	32	0.0313	0.1380	0.1326	0.0281	0.0175	0.0475
8	32	0.0313	0.1640	0.1586	0.0281	0.0175	0.0475
10	24	0.0417	0.1900	0.1834	0.0375	0.0233	0.0631
12	24	0.0417	0.2160	0.2094	0.0375	0.0233	0.0631
1/4	20	0.0500	0.2500	0.2428	0.0450	0.0280	0.0759
5/16	18	0.0556	0.3125	0.3043	0.0500	0.0310	0.0842
3/8	16	0.0625	0.3750	0.3660	0.0560	0.0350	0.0950
7/16	14	0.0714	0.4375	0.4277	0.0642	0.0400	0.1080
1/2	13	0.0769	0.5000	0.4896	0.0691	0.0430	0.1160

NATIONAL COARSE SERIES—MALE THREADS ONLY

- Micrometer readings over three wires. Blocked curves represent upper and lower limits for the size wire appearing in the colored block.

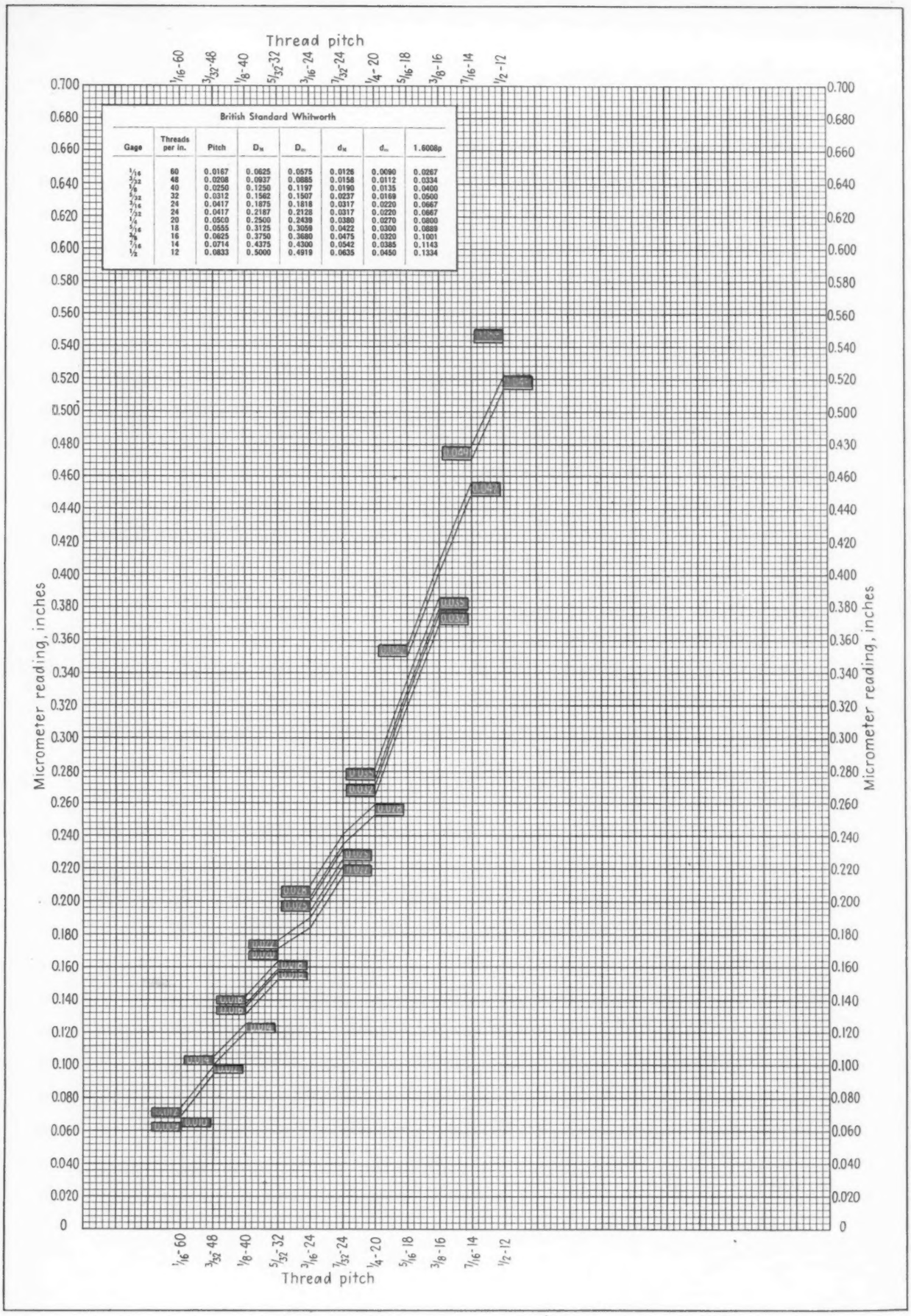


National Fine Thread Series

D. P.	Threads per in.	Pitch	D_s	D_m	d_s	d_m	1.5155p
0	80	0.0125	0.0600	0.0568	0.0112	0.0070	0.0189
1	72	0.0139	0.0730	0.0694	0.0125	0.0080	0.0211
2	64	0.0156	0.0860	0.0822	0.0140	0.0090	0.0236
3	56	0.0178	0.0990	0.0950	0.0160	0.0100	0.0270
4	48	0.0208	0.1120	0.1076	0.0190	0.0120	0.0315
5	44	0.0227	0.1250	0.1204	0.0200	0.0130	0.0344
6	40	0.0250	0.1380	0.1332	0.0230	0.0140	0.0379
8	36	0.0278	0.1640	0.1590	0.0250	0.0160	0.0421
10	32	0.0313	0.1900	0.1846	0.0290	0.0180	0.0472
12	28	0.0357	0.2160	0.2098	0.0320	0.0200	0.0541
¼	28	0.0357	0.2500	0.2438	0.0320	0.0200	0.0541
5/16	24	0.0417	0.3125	0.3059	0.0370	0.0230	0.0630
3/8	24	0.0417	0.3750	0.3684	0.0370	0.0230	0.0630
7/16	20	0.0500	0.4375	0.4303	0.0450	0.0280	0.0757
½	20	0.0500	0.5000	0.4928	0.0450	0.0280	0.0757

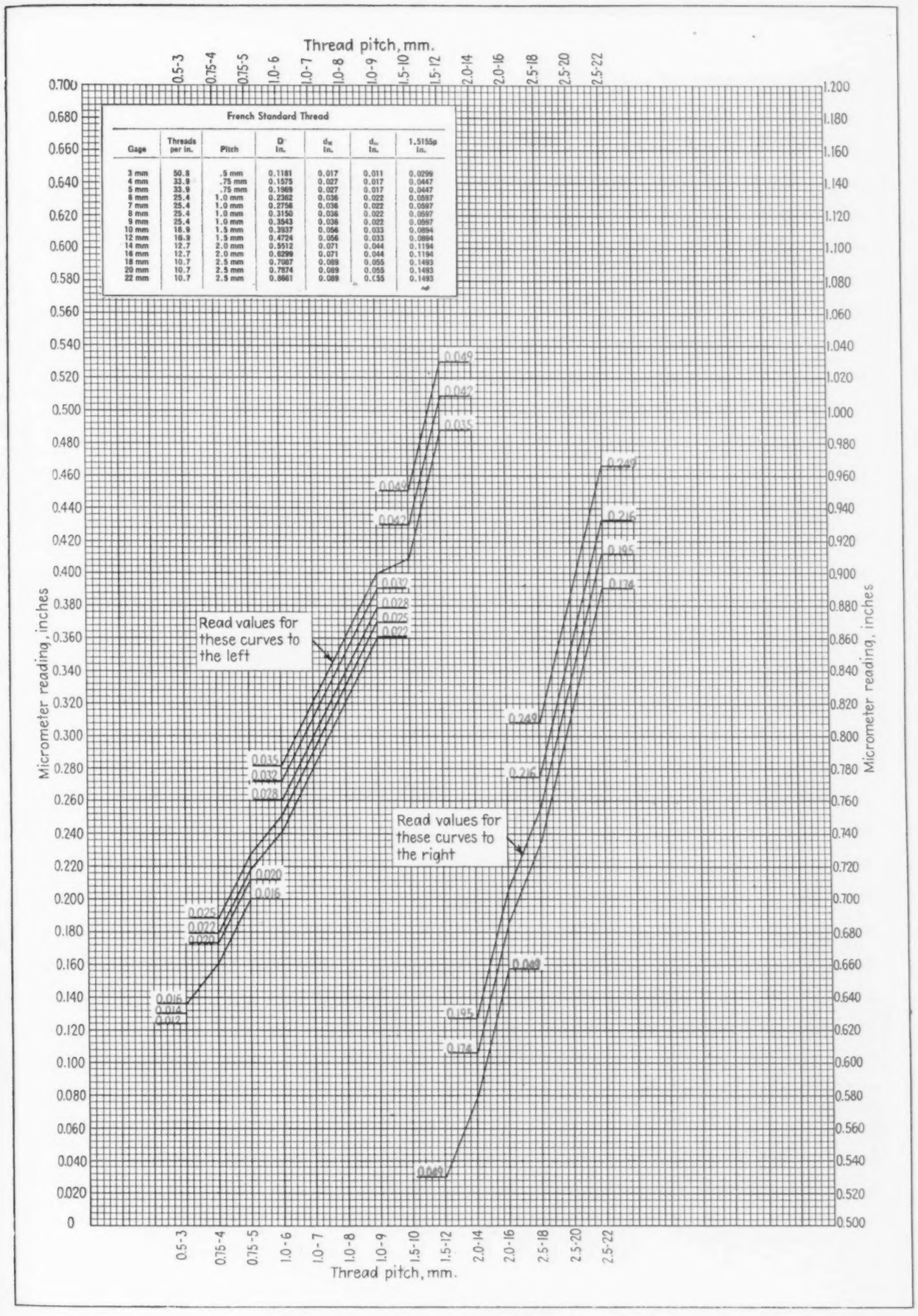
NATIONAL FINE SERIES—MALE THREADS ONLY

• Micrometer readings over three wires. Blocked curves represent upper and lower limits for the wire size appearing in the colored block.



WHITWORTH STANDARD—MALE THREADS ONLY

- Micrometer readings over three wires. Blocked curves represent upper and lower limits for the wire size appearing in the colored block.

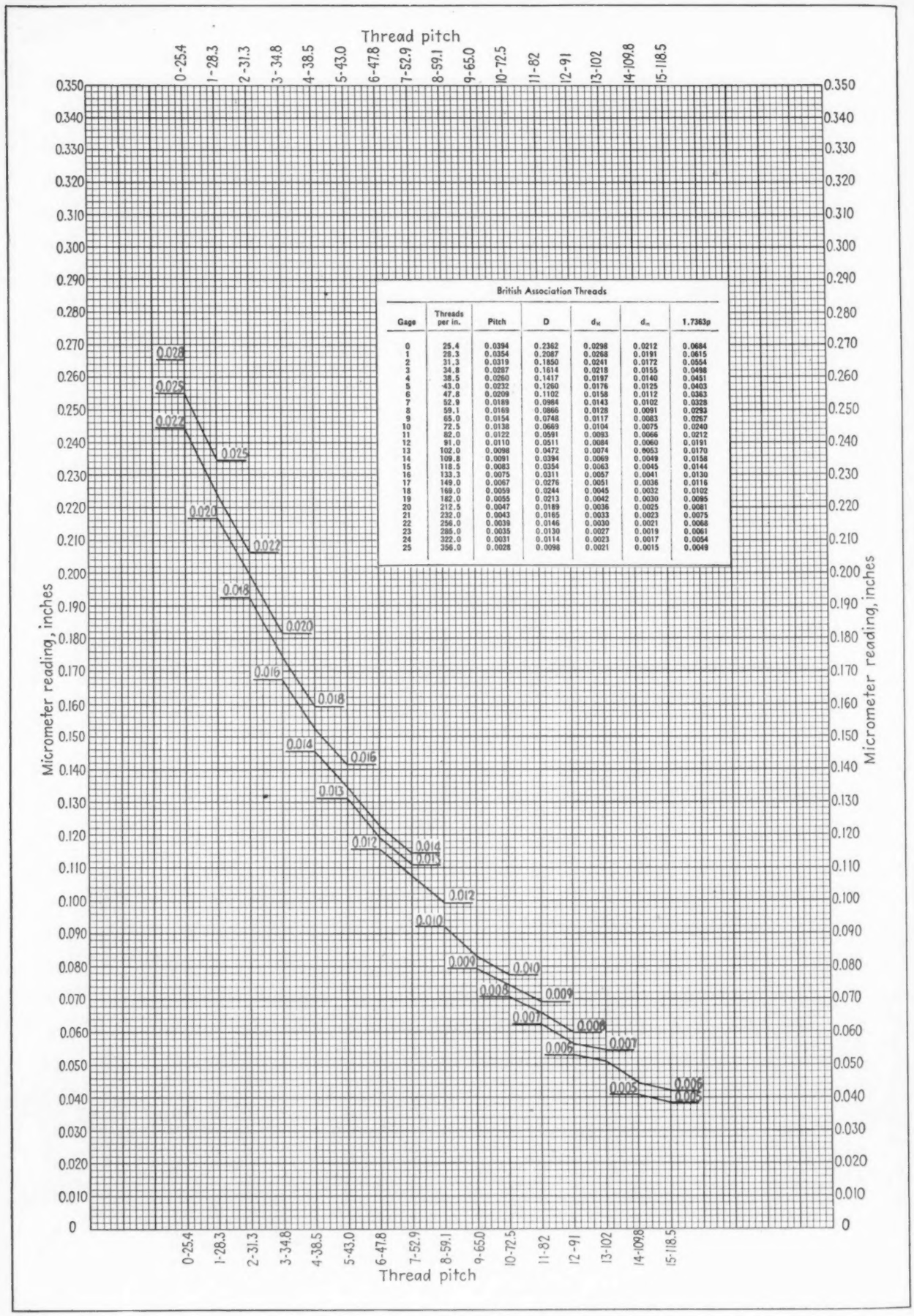


French Standard Thread

Gage	Threads per in.	Pitch	D Min. in.	d_E Min. in.	d_m Min. in.	1.5155p Min. in.
3 mm	50.8	.5 mm	0.1181	0.017	0.011	0.0299
4 mm	33.9	.75 mm	0.1575	0.027	0.017	0.0447
5 mm	33.9	.75 mm	0.1969	0.027	0.017	0.0447
6 mm	25.4	1.0 mm	0.2362	0.036	0.022	0.0597
7 mm	25.4	1.0 mm	0.2756	0.036	0.022	0.0597
8 mm	25.4	1.0 mm	0.3150	0.036	0.022	0.0597
9 mm	25.4	1.0 mm	0.3543	0.036	0.022	0.0597
10 mm	16.9	1.5 mm	0.3937	0.056	0.033	0.0894
12 mm	16.9	1.5 mm	0.4724	0.056	0.033	0.0894
14 mm	12.7	2.0 mm	0.5512	0.071	0.044	0.1194
16 mm	12.7	2.0 mm	0.6299	0.071	0.044	0.1194
18 mm	10.7	2.5 mm	0.7087	0.089	0.055	0.1493
20 mm	10.7	2.5 mm	0.7874	0.089	0.055	0.1493
22 mm	10.7	2.5 mm	0.8661	0.089	0.055	0.1493

FRENCH STANDARD—MALE THREADS ONLY

- Micrometer readings over three wires.



British Association Threads

Gage	Threads per in.	Pitch	D	d_K	d_m	1.7363p
0	25.4	0.0394	0.2362	0.0298	0.0212	0.0684
1	28.3	0.0354	0.2087	0.0268	0.0191	0.0615
2	31.3	0.0319	0.1850	0.0241	0.0172	0.0554
3	34.8	0.0287	0.1614	0.0218	0.0155	0.0498
4	38.5	0.0260	0.1417	0.0197	0.0140	0.0451
5	43.0	0.0232	0.1260	0.0176	0.0125	0.0403
6	47.8	0.0209	0.1102	0.0158	0.0112	0.0363
7	52.9	0.0189	0.0984	0.0143	0.0102	0.0328
8	59.1	0.0169	0.0866	0.0128	0.0091	0.0293
9	65.0	0.0154	0.0748	0.0117	0.0083	0.0267
10	72.5	0.0138	0.0669	0.0104	0.0075	0.0240
11	82.0	0.0122	0.0591	0.0093	0.0066	0.0212
12	91.0	0.0110	0.0511	0.0084	0.0060	0.0191
13	102.0	0.0098	0.0472	0.0074	0.0053	0.0170
14	109.8	0.0091	0.0394	0.0069	0.0049	0.0158
15	118.5	0.0083	0.0354	0.0063	0.0045	0.0144
16	133.3	0.0075	0.0311	0.0057	0.0041	0.0130
17	149.0	0.0067	0.0276	0.0051	0.0036	0.0116
18	169.0	0.0059	0.0244	0.0045	0.0032	0.0102
19	182.0	0.0055	0.0213	0.0042	0.0030	0.0095
20	212.5	0.0047	0.0189	0.0036	0.0025	0.0081
21	232.0	0.0043	0.0165	0.0033	0.0023	0.0075
22	256.0	0.0039	0.0146	0.0030	0.0021	0.0068
23	285.0	0.0035	0.0130	0.0027	0.0019	0.0061
24	322.0	0.0031	0.0114	0.0023	0.0017	0.0054
25	356.0	0.0028	0.0098	0.0021	0.0015	0.0049

BRITISH ASSOCIATION—MALE THREADS ONLY

● Micrometer readings over three wires.

(*Continued from page* 51)
are in double line or blocked form. When using these, the upper line represents the high limit, and the lower line the low limit. Other wire sizes within the maximum and minimum limits could be plotted on the charts, but only Stubbs gage sizes are included.

As an example of the use of these charts, assume that a No. 10-24 thread is to be checked with 0.025-in. wires. This is a National Coarse thread and the proper chart is entered at the 10-24 value at the bottom of the chart, and this value traced vertically to the point of intersection with the 0.025-in. block. Reading on the vertical scale the values of the upper and lower lines of the curve will be seen to be 0.195 and .0202 in. These figures represent the high and low limits of the permissible tolerance.

Similarly, to determine the micrometer readings for a No. 5-44 thread, using 0.014-in. wires; enter the National fine series chart at the 5-44 value on the bottom line and trace this value vertically to its intersection with the 0.014-in. block. Reading from the vertical left hand scale, the permissible micrometer readings will lie between 0.137 in. and 0.142 in.

British Standard Fine Threads

No chart is presented to correspond with this table as this thread is very little used in the U. S.

Gage	Threads per in.	Pitch	D_M	D_m	d_M	d_m	1.6008p
7/32	28	0.0357	0.2188	0.2131	0.0271	0.0193	0.0572
1/4	26	0.0385	0.2500	0.2441	0.0291	0.0207	0.0616
9/32	26	0.0385	0.2813	0.2754	0.0291	0.0207	0.0616
5/16	22	0.0455	0.3125	0.3061	0.0345	0.0245	0.0728
3/8	20	0.0500	0.3750	0.3683	0.0380	0.0270	0.0800
7/16	18	0.0556	0.4375	0.4304	0.0422	0.0300	0.0889
1/2	16	0.0625	0.5000	0.4925	0.0475	0.0337	0.1001
9/16	16	0.0625	0.5625	0.5550	0.0475	0.0337	0.1001
5/8	14	0.0714	0.6250	0.6170	0.0543	0.0386	0.1143
11/16	14	0.0714	0.6875	0.6795	0.0543	0.0386	0.1143
3/4	12	0.0833	0.7500	0.7413	0.0633	0.0450	0.1334
13/16	12	0.0833	0.8125	0.8038	0.0633	0.0450	0.1334
7/8	11	0.0909	0.8750	0.8660	0.0691	0.0491	0.1455
1	10	0.1000	1.0000	0.9905	0.0760	0.0540	0.1601

It will be noted that on the charts for the National Coarse, National Fine, and French Standard threads, micrometer readings are given on the right hand side for the larger sizes. This is to avoid making excessively long charts. It will also be noted that on the British Association and French Standard charts, the curves are in single line form, or in other words, no tolerance is shown. This is occasioned by the fact that no figures are available on the standard tolerances of the major diameters of either of these forms of thread.

Carbide - Cored Projectiles

ALTHOUGH the Germans spent incredibly large sums of money, as far back as 1936, developing armor-piercing projectiles with carbide cores, apparently they never got around to producing one as simple and effective as the U. S. Army's high-velocity, carbide-cored projectile which destroyed so many of their thick-skinned, heavy Tiger tanks.

German projectiles with carbide cores typical of production in the later months of the war were brought to this country by Harry Crump, assistant to the vice-president of Carboloy Co., Inc., upon his return from a 3½ months investigation of German wartime industrial development as the carbide tool specialist of the U. S. Foreign Economic Administration's Technical Industrial Intelligence Commission.

A cut-away section of the German projectile reveals that it is composed of many parts, each carefully machined and assembled with many fine screw threads. Even plastics were used in the German projectile. Workmanship was excellent, but many parts were highly finished which did not need to be finished at all.

In contrast, the Carboloy-cored American projectile was extremely simple in design and easy to produce, as shown in the accompanying illustration.

BELOW
CARBOLOY-cored American projectile combines extreme simplicity with deadly effectiveness.

ABOVE
CUT-away section of a German projectile showing the complicated method of construction.

Rust Determination In Presence of Steel

By FRANK GIBADLO
Chemical Engineer, Metal Hydrides Inc., Beverly, Mass.

A preferential solvent and its application for the identification and estimation of rust and hydrous ferric oxide in the presence of steel is herein described. Solubility of the steel in this solvent is determined and found to be 0.1 mg per 100 ml at 68°F. Freshly precipitated hydrous ferric oxide is dissolved in the solvent and quantitatively determined, and a quantity as low as 0.01 mg (as Fe) is determined. Additional data is presented to show the effect of solvent concentration on the solubility of rust.

IN analytical work there has been no generally accepted preferential solvent for rust in the presence of steel. Clark[1] has shown that in ordinary chemical tests the base metal is preferentially dissolved. He identifies rust on steel by impressing a specially prepared gelatin paper upon the specimen and removes the rust due to the physical adherence of the ferric oxide layer. The gelatin paper is subsequently immersed in a 10 pct hydrochloric acid solution containing 0.05 pct potassium ferrocyanide to produce a Prussian blue pattern. This procedure, however, obviously is not applicable with irregularly shaped objects or with inaccessible specimens. Small particles of chipped steel will interfere with the test.

A method has been developed by which rust is preferentially dissolved. The solvent,* which is composed of potassium tartrate and potassium hydroxide, possesses the ability to dissolve the hydrous iron oxides. It has been graphically shown[3] that the solubility of hydrous iron oxides in this solvent is a function of their degree of hydration; diminishing the degree of hydration by the application of heat or by aging, correspondingly lessens the solubility of the oxides. Engelder[2] states that tartrates, citrates, etc., in basic solutions form complex iron compounds. Weiser,[4] however, states that tartrates and citrates peptize the hydrous oxides.

TABLE I
Solubility of Steel in Potassium Tartrate Solvent

Test	Temperature of Treatment °F	Time to Evaporate to Dryness, Hr	A* Gravimetric Method		B Colorimetrically with KCNS	
			Loss, G	Loss, Pct	Dissolved as Fe, G	Fe Dissolved, Pct
A	68	1	0.0002	0.008	0.00004	0.0016
B	68	1	0.002	0.003	0.00006	0.001
C	68	1	0.00055	0.007	0.00025	0.005
D	131	approx. 10	.....	.....	0.00045	.....
E	131	approx. 10	.....	.....	0.000025	0.0008
F	212	approx. 7	0.0009	0.014	0.0003	0.007
F_1	212	approx. 7	0.0009	0.014	0.00006	0.0014
G	212	approx. 7	0.0003	0.008	0.0002	0.005
H	212	approx. 7	.....	.....	0.00003	0.0016

* Higher values of col. A assumed to be due to solubility in the solvent of the silicates, etc., contained in the steel.

TABLE II
Solubility of Freshly Precipitated Ferric Oxide

Potassium Tartrate Solvent Used, Ml	Amount of Hydrous Fe_2O_3 Treated, Mg	Hydrous Fe_2O_3 Dissolved as Fe, Colorimetrically With KCNS, Mg
25	0.01	0.01
25	0.05	0.048
25	0.30	0.29
25	0.70	0.67
25	5.00	4.95
25	25.00	24.91
100	200.00	198.00
100	400.00	392.50

**C.P. potassium tartrate = 100 g*
C.P. potassium hydroxide 30 pct = 300 ml
Water (distilled) to make = 1 liter

In tests A, B and C of table I, the specimens (steel plates approximately 2.5 g in weight with a total surface area of 13 sq cm) were treated for 1 hr with 25 ml of potassium tartrate solvent at a temperature of 68°F. The solvent was then-filtered through a Whatman No. 42 filter paper. An aliquot portion of 2 ml of filtrate was taken and neutralized with diluted hydrochloric acid (3N) plus an excess of 5 ml. To this, 10 ml of 5 pct potassium thiocyanate solution and 5 ml of 3 pct hydrogen peroxide were added, and the solution was made up to 50 ml in a tall Nessler-type cylinder and compared colorimetrically to a set of iron standards** similarly made up. To produce identical conditions in regard to the effect of potassium tartrate, it is necessary to add to the iron standard solutions an equivalent amount of potassium tartrate solvent as

[1] *Clark, R. O., Ind. Eng. Chem. Anal. Ed.* 15, 7, 464 (1943).
[2] *Engelder, C. J., "Semi-Micro Qualitative Analysis," John Wiley & Sons,* 1936, *p.* 202.
[3] *Gibadlo, F., Gas Age,* 91, 9, 1943, 24, 42.
[4] *Weiser, H. B., Inorganic Colloid Chemistry, vol* 2, *John Wiley & Sons, N. Y.,* 1935, *p.* 51.

***Standardized iron solutions:*
C.P. ferric ammonium sulfate.
Solution A — 1 *ml* ≈ 0.3 *mg Fe*
Solution B — 1 *ml* ≈ 0.003 *mg Fe*

contained in the aliquot test portions, which in this case is 2 ml.

The concentration of the potassium thiocyanate solution used here is less than normally recommended in the determination of iron. With the lesser concentration, the color was slightly more stable.

In tests D and E of table I, the specimens (in D, steel wire approximately 2 g in weight, and in E, steel shavings approximately 2 g in weight) were treated with the solvent and mixture was evaporated to dryness at 131°F, which required approximately 10 hr. The residue in each case was brought into solution by adding water to make a total volume of 25 ml and the resulting solution was filtered through a Whatman No. 42 filter paper. A 2-ml aliquot portion was taken and analyzed for iron as described above.

The specimens in tests F, F_1, G and H of table I were treated similarly to the specimens in tests D and E, except that they were treated initially with the solvent at 212°F instead of 131°F.

The steel specimens used in tests A, B, C and D, table I, possessed a clean glossy metallic surface with no visible evidence of rust. In tests E and F, the steel specimens were cleaned with dil. hydrochloric acid and also with potassium tartrate before the tests were begun. The specimens were weighed before and after treatment and col. A represents the loss in weight due to dissolving in the solvent. The solubility of steel in this solvent has been found to be 0.1 mg per 100 ml at 68°F. Test F_1 employs the same specimen as used in test F. Col. B represents iron determined colorimetrically as metallic iron.

Quantitative amounts of standard iron solution were treated with ammonium hydroxide and boiled to precipitate hydrous ferric oxide, which was subsequently filtered and washed. The precipitates were then treated individually with 25 ml of the potassium tartrate solvent at 131°F for 1 hr. Larger amounts of ferric oxide precipitate were treated with 100 ml of the solvent at 131°F until dryness, which required approximately 10 hr. To each residue water was added to make a total volume equal to original solvent used, i.e., 25 or 100 ml. The solution was then filtered and the iron was determined as described. Table II shows that hydrous ferric oxide freshly precipitated is completely soluble in the solvent. In addition, aliquot portions of the filtrate containing the dissolved ferric oxide were acidified and potassium ferrocyanide solution was added. The presence of Prussian blue precipitate in every case established a qualitative test by this method. With large quantities of soluble iron, the solvent was evaporated to dryness and then ignited to destroy the tartrate. The iron in the residue was dissolved and determined volumetrically with potassium permanganate. The results obtained compared favorably with the colorimetric method.

Specimens of steel plates with a total area of 6.45 sq cm were cleaned with dil. hydrochloric acid (1:4) and also with the potassium tartrate solvent to remove all traces of rust. After being dried in the oven, the specimens were exposed to the atmosphere, each for a different length of time. The longer the exposure, the more rust spots were in evidence. The exposed specimens were subsequently treated with the potassium tartrate solvent as described in the procedure. The results are shown in table III. The amount of rust found was almost directly proportional to the time of exposure of the steel to the atmosphere.

A sample of rust (analyzed 88.0 pct Fe_2O_3) was taken from a steel plate and another sample (analyzed 88.2 pct Fe_2O_3) was taken from a steel bar. Both specimens had been exposed to the atmospheric elements for at least 1 yr. They were ground down to pass 100 mesh. One-tenth (0.1) mg of each sample was treated individually with 10 ml of potassium tartrate solvent at room temperature for 10 min, then filtered and tested for iron. With potassium thiocyanate, both samples gave a positive test for iron, easily discernible.

Samples of rust, each weighing 0.1 g were taken from steel specimens exposed to the atmosphere for at least 1 yr and treated with 12.5, 25 and 50 ml of potassium tartrate solvent, respectively, at a temperature of 131°F until dryness. The residue was redissolved with water to the same volume as the solvent originally used, i.e., 12.5, 25 and 50 ml; varying the amount of water used to redissolve the residue from one-half to double the latter volumes had no appreciable effect on the solubility of iron.

In experiments 1, 2 and 3, table IV, the concentration of potassium tartrate solution is 10 g per 100 ml. In experiment 4, the concentration is 5 g per 100 ml, and 25 ml of this concentration dissolved 19 mg Fe. In experiment 1, 12.5 ml of solvent, which dissolved 18 mg Fe, contains the same amount of potassium tartrate as 25 ml of solvent in experiment 4. This variation of the concentration of the potassium tartrate solution from approximaely 5 to 10 pct had only a slight effect on the solubility of iron. Experiment 3 shows 75 mg, or 85.2 pct of the total Fe_2O_3, is the limit of solubility of the rust in the solvent. This indicates a lower degree of hydration than that of freshly precipitated hydrous ferric oxide, which has been found to be almost completely soluble.

The results in table IV show that the amount of iron dissolved is virtually directly dependent upon the total quantity of potassium tartrate used. It has also been found that an increase in temperature accelerates the reaction.

TABLE III—Estimation of Rust Formed on Steel

Approx. Time of Exposure of Specimens to Atmosphere	Dissolved by Potassium Tartrate Solution as Fe, Mg	Fe Dissolved, Pct
Steel (Steel Plate)	0.025[a]	0.0008
1 week	0.25[b]	0.008
3 weeks	0.45[b]	0.015
2 months	0.70[b]	0.035
4 months	1.80[b]	0.070

[a] Steel sample previously cleaned with dil. HCl and subsequently with potassium tartrate solvent.
[b] This value minus (0.025)[a] assumed to be Fe equivalent of rust formed, i.e., 0.25-0.025 = 0.225 mg.

TABLE IV—Solubility Data

Experiment	Quantity of Solvent Used, (Ml)	Rust[a] Dissolved as Fe_2O_3 (av.), (Mg)
1[b]	12.5	18
2[b]	25	35
3[b]	50	75[d]
4[c]	25	19

[a] 0.1-g sample of rust (88 pct Fe_2O_3) used in each test and treated with solvent at 131° F to dryness.
[b] Concentration of solvent 10 g per 100 ml.
[c] Concentration of solvent 5 g per 100 ml.
[d] Maximum limit of solubility of 0.1 g rust (85.2 pct of total Fe_2O_3).

New Era Exposition

Tool engineers, holding their first national exposition since 1941, see all the latest developments in production equipment. Speakers at the 14th Annual ASTE Convention, held in conjunction with the show, stress the necessity for increasing production and reducing costs.

A. M. Sargent, the first national president elected under the new ASTE constitution, is president of the Pioneer Pump & Mfg. Co., and Pioneer Engineering & Mfg. Co., Detroit.

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VISITORS to a large city rarely have an opportunity to appreciate its true size, since their activities are usually confined to the relatively small downtown area. Many of those who stopped in Cleveland this past week, however, and they were legion, were able to find out for themselves how big it really is. So acute was the shortage of rooms that many people were obliged to find quarters in private homes on the outskirts of the city, from whence it was a considerable ride by express bus to reach the Cleveland Public Auditorium where the American Society of Tool Engineers held its 5th National Exposition.

Run in conjunction with the 14th Annual ASTE Convention, the show got off to a flying start with every available square foot of floor space occupied. Particularly noticeable was the attention that had been paid to the arrangement of the exhibits. Aisles were much wider than usual, leaving plenty of space at each booth for the interested, as well as the merely curious, to see clearly whatever might be going on. Noteworthy too, was the relative quiet prevailing; no raucous loudspeakers were permitted, no clanging of hammers or other device which, while compelling attention, nevertheless becomes in a few hours a source of irritation to those whose feet are beginning to talk back after the long promenade around the exhibits.

Motion pictures also, were banned from the exhibition floors, but were featured every morning from 9.00 to 12.00 in the main ballroom and two of the club rooms of the auditorium. These were all of a technical nature, and aroused widespread interest among capacity audiences. By their being run on an announced schedule, it was possible for the visitor to select those he particularly wished to see, and to view them under much better conditions than are possible in a floor booth.

More than 400 different classes of exhibits were on view, covering every phase of activity in which tool engineers and production men might possibly be interested. As might be expected, the largest group was that of gages and measuring instruments, of which there were more than 40 examples covering standard gages, optical measuring equipment, and special machines and devices for automatic inspection, many of which represented developments brought out under the pressure of wartime production and which were distinctly new. Carbides ran a close second, including not only cutting tools, but various applications which came as a distinct surprise to many visitors. Hand tools also, were much in evidence, drawing attention to the fact that while much publicity has been given to recent advances in machine tool design, these equally important items have not been neglected. Both electrical and pneumatic power has now been applied to reduce the physical labor and speed up the performance of even the most simple operations normally performed by hand.

Machine tools also, were strongly represented, and virtually every class was covered, from lathes to drill presses and from milling machines to grinders. It would be difficult indeed to point out any one exhibit as outstanding, although mention might be made of the Cosa exhibit of Swiss precision machines which never lacked for a steady audience and of the Tavannes six-spindle automatic which attracted particular attention from the fact that it is arranged vertically, the six pieces of bar stock being fed downwards into the chucks, and all drilling and tapping being done from the bottom up. A full size navy torpedo exhibited in cut-away by the Navy Dept., Bureau of Ships, as well as several other navy exhibits, was a source of considerable comment, and

Sets Peacetime Goals

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HERBERT D. HALL, president of Herbert Hall Co., Newark, N. J., who was chiefly responsible for organizing the outstanding technical programs presented at the convention.

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while this had no direct relation to tool engineering itself, it furnished a splendid example of the end product which tool engineering has done so much to create.

The general public was not admitted to the show, attendance being strictly limited to ASTE members, and to guests of the various exhibitors who had a vital interest in the material displayed. Admittance was by official invitation only, and the usual pests of such shows, the souvenir seekers and curiosity hunters, were carefully excluded. This resulted in virtually a hand-picked audience, and it was interesting to note that there seemed to be little of the usual aimless wandering. Rather, groups gathered at the different booths, and displayed a lively interest that must have been gratifying indeed to the exhibitors.

Actual attendance figures are not immediately available, but it is officially estimated that upwards of 50,000 persons attended during the week. Indicative of the interest displayed is the fact that more than 3500 paid registrations were recorded by 1 p.m. on the opening day, with better than 1000 entering during the first hour. The new pre-registration system, adopted for the first time at this show, must be credited with the ease with which visitors were processed through the registration desk. It required only a matter of seconds for the visitor to present his prepared invitation card, and to receive in return his badge of admittance.

All show arrangements were under the control of J. V. Friel of Reber-Friel Co., Philadelphia, who is to be commended for an excellent job of show management. The arrangement of the exhibits and the overall organization have never been better.

Great interest was displayed in the plant tours which took in some of the most important industries in the Cleveland areas. Tours were held every day, transportation by bus being provided by the Cleveland ASTE Chapter Show Committee. Warner & Swasey provided tours on Monday, Tuesday and Wednesday, as also did National Acme. One tour each day except Thursday was available at Ohio Crankshaft. Reliance Electric and Clark Controller were hosts for three days, and two tours were arranged by the White Motor Co. Cleveland Graphite Bronze, Willard Storage Battery, and the NACA aircraft engine research laboratory each provided one tour during the show.

Long a feature of ASTE conventions, plant tours

• The oath of office is administered by C. V. Briner, extreme right, to the new national officers. Left to right, R. B. Douglas, secretary; I. F. Holland, 3rd vice-president; T. P. Orchard, 2nd vice-president; V. H. Ericson, treasurer; A. M. Sargent, president.

• Retiring ASTE national president Cleet Briner makes his farewell address and declares himself heavily overpaid in friendships gained, for the labors of the past year.

were of necessity sharply restricted or entirely eliminated during the war years, and it is understandable that there should have been a very lively interest on the part of members to see the many changes in both plant and equipment that have taken place during these past few years.

Highspot of the convention was the annual banquet and installation of officers which was held in the main ballroom of the Statler on Thursday evening, and at which George T. Carpenter, president, Packard Motor Car Co., was the principal speaker.

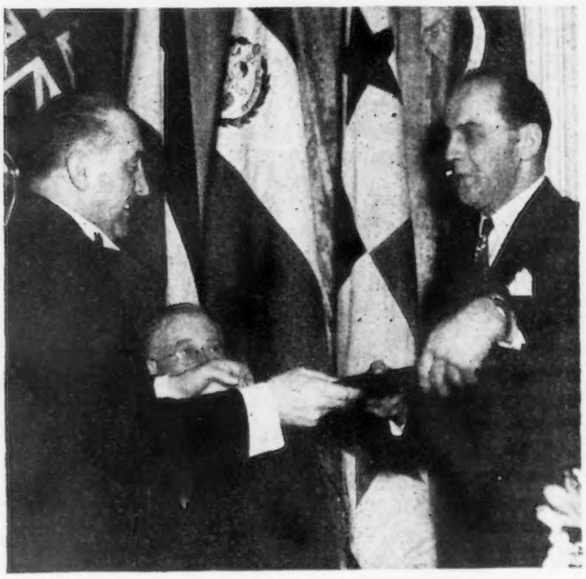
New national president of the society is A. M. Sargent, president, Pioneer Pump & Mfg. Co., and Pioneer Engineering & Mfg. Co., Detroit. A charter member of ASTE, Mr. Sargent served as its first national secretary, and latterly as a director and as 1st vice-president. From his long association and active participation in ASTE work, he brings to the office a wealth of experience and interest which bids fair to make him an outstanding president among the many outstanding men who have thus far held the position.

Mr. Sargent is succeeded as 1st vice-president by W. B. Peirce, vice-president, Flannery Nut & Bolt Co., St. Louis, and the office of 2nd vice-president is filled by T. P. Orchard, general manager, American Tool Engineering Co., New York.

Irwin F. Holland, general superintendent, small tool and gage dept., Pratt & Whitney Div., Niles-Bement-Pond Co., Hartford, and formerly chairman of the society's Constitution & By-laws Committee, was named 3rd vice-president, while R. B. Douglas, works, mgr., Propeller Div. Canadian Car & Foundry Co., Ltd., Montreal, and regional director from eastern Canada, was named national secretary.

V. H. Ericson, vice-president, Johnson de Vou, Inc., Boston, was elected treasurer, with W. Dawson of F. F. Barber Machinery Co., Ltd., re-elected as assistant secretary-treasurer. Harry E. Conrad was re-elected executive secretary of the society.

The technical programs presented each day maintained an exceptionally high standard of quality, and reflect the greatest credit to H. D. "Herb" Hall and his hard working program committee. Differing somewhat from the conventional practice of presenting single technical papers, each meeting was in the form of a symposium with from two to four speakers, each handling a different phase of the main subject. Educational in nature, each subject served to stress the principal theme of the entire convention, namely, "More goods at lower cost." Sessions were held in the main ballroom of the auditorium, both afternoon and evening, and in spite of the many attractions offered by the tool show itself, were extremely well attended, with up to 800 present at each. That so many would take the trouble to return to the auditorium after dinner is an indication of both the serious nature of those attending, and of the extremely high quality of the presentations. It is very evident that the tool engineers attending this convention came with a sincere desire to learn, and not as an excuse for a good time. Space limitations prevent our reprinting even a part of all the uniformly excellent papers, but excerpts from some of them are presented herewith.



• Symbolic of International unity, the arms of the Institute of Production engineers, hand painted and suitably framed, are presented to Otto Winter by E. W. Hancock, president of the British organization.

Speaking Monday afternoon at the opening session, Haylett B. Shaw, staff engineer, Methods Engineering Council, Pittsburgh, outlined the methods to be followed in improving materials handling methods through the selection of modern and efficient equipment. He emphasized particularly the necessity for taking materials handling into account during the layout of new buildings, and suggested that

for maximum efficiency the building be constructed around the handling system, rather than trying to fit the system into the building.

The mass production of artillery shells, from the handling viewpoint, was described by O. F. Ewart, vice-president, W. F. & John Barnes Co., Rockford, Ill. Starting with the 37 mm shell, he described the various methods of handling, and showed the changes that became necessary as production shifted to larger calibers beyond human lifting capacity. An interesting motion picture illustrated the operations in the Barnes ordnance plant. In conclusion, the speaker described what would appear to be the ultimate in product handling, where a large shell is completely processed, from rough forging to completely finished part, without being touched by human hands.

• The armorial bearings of the British Institute of Production Engineers are turned over to the custody of A. M. Sargent, national president of ASTE.

The final speaker on this program, A. W. Kramer, Jr., air conditioning dept., General Electric Co., Bloomfield, N. J., introduced a new approach to determining the facilities and manpower needed for a specific manufacturing project. He explained how a study of a plant by individual production lines can lead to a solution of the problems involving size, capacity, location, operating organization, and total capital investment necessary for the production of any specific product. As an example of the savings effected by this method, he quoted the case of press parts produced before the war on 30 presses in three widely separated plants. Proper analysis made it possible to obtain the same output with four presses in a single plant.

The evening session was devoted to the economic control of quality, the first speaker being E. S. Marks, quality engineer, Pratt & Whitney Aircraft, East Hartford, who stressed the necessity for standardization and the employment of specifications, and showed how reliance on the memory or judgment of individual employees may lead to erroneous practices which seriously hinder economic control of quality.

• G. T. Christopher, president, Packard Motor Car Co., and principal speaker at the ASTE annual banquet, is caught in an informal pose.

The second speaker, A. L. Davis, associate director, Evening School and Extension Div., Rochester Institute of Technology, Rochester, N. Y., indicated the four major functions of inspection or quality control, namely, the providing of protection, the maintenance of product control, the portrayal of quality performance, and the education and training of personnel in matters of quality.

Statistical quality control was discussed by J. G. Manuele, director of quality control, Westinghouse Electric Corp., East Pittsburgh. While confusing to the uninitiated, the entire statistical control system was made clear by means of charts and diagrams, explaining the method of statistical sampling.

P. V. Miller, manager, small tool and gage div., Taft-Pierce Mfg. Co., Woonsocket, R. I., spoke on dimensional control, and offered solutions to the problem of choosing the method of inspection and the type of inspection equipment that would provide the greatest economy while giving suitable control of quality in the product.

The Tuesday morning session was devoted to cutting oils, with papers presented by D. J. Wangelin, Research & Development Laboratories, Pure Oil Co., Chicago, and W. H. Oldacre, president and general manager, D. A. Stuart Oil Co., Chicago.

Of particular interest to tool engineers were the talks given at the evening session. The first of these was presented by A. H. d'Arcambal, vice-president, Pratt & Whitney Div., Niles-Bement-Pond Co., Hartford. Visiting Germany shortly after the cessation of hostilities, d'Arcambal had a unique opportunity of exploring German manufacturing methods, and was able to describe first-hand the many ingenious devices developed to offset the shortages of

SYMBOLIC of the new era in tool engineering, the presidential gavel, having a solid Carboloy head and a transparent plastic handle, is presented to A. M. Sargent, newly elected president of ASTE, by retiring president C. V. Briner.

materials and manpower in the manufacture of precision cutting tools and gages.

The second speaker, J. F. Allen, project engineer, Warner & Swasey Co., Cleveland, described the comprehensive research program undertaken by his company into the possibilities of carbide applications to single point tool turning. The equipment and methods employed were described in detail, and the conclusions reached carefully explained*.

For complete details see "Single-Point Turning Research," THE IRON AGE, Jan. 10 and Jan. 17, 1946.

Tool engineering education and professional development formed the theme of the Wednesday afternoon meeting, with papers presented by O. B. Jones, president, Detroit College of Applied Science, and O. W. Boston, chairman, department of metal processing, University of Michigan. Tool Engineering Advancement was discussed at the evening session by C. E. MacQuigg, dean of the college of engineering, Ohio State University, and E. W. Hancock, president, Wolverhampton (England) section, The Institute of Production Engineers, and works general manager, Rubery-Owens & Co., Ltd.

At a second evening session, running concurrently, tooling for permanent molds was described by H. O. Poock, ass't master mechanic, Inland Mfg. Div., General Motors Corp., Dayton, and K. T. Kuck, chief engineer, Monarch Machine Tool Co. The first paper dealt with the manufacture of molds for rubber, and was illustrated by a motion picture showing the production of crude rubber in Sumatra. The second paper was devoted to the making of molds for glass and plastics, and related the development of the Monarch Shapemaster lathe. Movies of this machine in operation were shown, and great interest was displayed in the fact that it is able to turn squares, or as many as 500 straight or tapered flutes.

Because of the annual banquet and installation of officers, only one technical session was held Thursday. This dealt with tool engineering and profits, and was very capably handled by R. E. Flanders, chairman, Jones & Lamson Machine Co., and president, Bryant Chucking Grinder Co., Springfield, Vt., A. G. Bryant, vice-president, Cleereman Machine Tool Co., Chicago, and C. E. Ives, Ives Engineering & Planning Co., Chicago. Elsewhere in this issue two of these papers are presented in condensed form.

The concluding technical session, held Friday afternoon, had as its subject, controls and drives for special machine design. L. R. Twyman, manager, industrial division, Vickers, Inc., Detroit, handled the aspects of hydraulic drives and controls, and explained modern methods of applying hydraulic power

• Auguring well for the continuance of Anglo-American relations, a certificate of honorary membership in IPE is presented to Cleet Briner, retiring president of ASTE.

• Originally presented to last year's president, a hat is passed on to president Sargent who protests that, "At least it was new when Cleet got it."

to various types of machines and motions which, while coming into increasing popularity with designers, are not yet sufficiently well known throughout industry.

He was followed by Lev A. Trofimov, consulting engineer, who enumerated the five known principles upon which variable speed drives can be made, and explained the operation of each.

G. A. Caldwell, manager, control engineering dept., Westinghouse Electric Corp., Pittsburgh, presented a paper on electric and electronic drives and controls, and pointed out today's trends in the electrical equipment of machine tools, with particular emphasis on the growing use of electronics. The final paper was presented by B. P. Graves, director of design, Brown & Sharpe Co., Providence. In his talk, illustrated by slides, Mr. Graves explained the purpose of each type of design and the reasons for its adoption. Details of the various mechanical, electrical, hydraulic, and pneumatic drives were considered.

Always a noteworthy affair, the annual banquet was held Thursday evening with George T. Christopher as the principal speaker. President of Packard Motor Car Co., and a former tool engineer, Mr. Christopher spoke in glowing terms of the work of the tool engineer, referring to him as the middleman of technology. "You cannot go around him," Mr. Christopher declared, "you must go through him." Speaking in humorous vein, though none the less emphatically, he placed particular emphasis on the need for continued close cooperation between production engineering and design engineering, and expressed the belief that still greater developments in the way of production tooling would be forthcoming in the near future. Drawing on his own experience, he recalled the days when a 7 pct draw was the maximum possible in automobile sheet stock, and contrasted this with the deep draws on today's automobile fenders. Given the proper materials, tool engineers can solve any production problem, in his opinion, and much of the advance in product design is directly attributable to their ingenuity.

Featured also at the head table was E. W. Hancock, works general manager, Rubery-Owens & Co., Ltd., England, and president, Wolverhampton section, Institute of Production Engineers. In an inspiring address, Mr. Hancock stressed the need for complete harmony between the English speaking nations, not so much, he said, between diplomats and officials, as between the common people. Praising the work of ASTE, he pointed out the similarity of that organization to its British counterpart, the IPE, and as a gesture of goodwill, presented the society with a hand-painted and framed replica of the coat of arms of his own society. To still further weld the links of friendship existing between the two societies, he conferred upon retiring president Briner a certificate of honorary membership in IPE, and explained that this honor was to be conferred upon each president in succession.

Successful beyond the dreams of the organizing committee, the annual convention and New Era Exposition served to drive home the thought expressed by Ralph E. Flanders that the trend in modern machine design is to produce a machine that will pace the worker rather than have the worker pace the machine, and to have the worker do no work.

Tool Engineering and Profits

o o o

By RALPH E. FLANDERS

President, Jones & Lamson Machine Co. and Bryant Chucking Grinder Co.

o o o

A MANUFACTURING business starts out with a product to be made, whose design and materials are presumed to have been established before manufacture is considered. First must be decided the sequence of operations by which the parts of the product shall be produced. This in turn determines plant layout if the plant is being tailored to the product and involves as well the equipment for moving the parts from operation to operation. In this initial problem, you have to consider what is most profitable. What is the expected scale of operations? If small, the plant layout will be simple and the handling of the parts will be by the most obvious means. If large production is contemplated, it will be necessary to go into such refinements as will give the lowest cost for the rate of production that is in prospect.

The same judgment will be applied to the next item on your program, that of selecting the production machinery. If the planned-for volume is small, you will use to a large extent standard machine tools. If on the other hand the expected production is very great, you will in many instances be justified in designing or having designed and built completely special productive machinery.

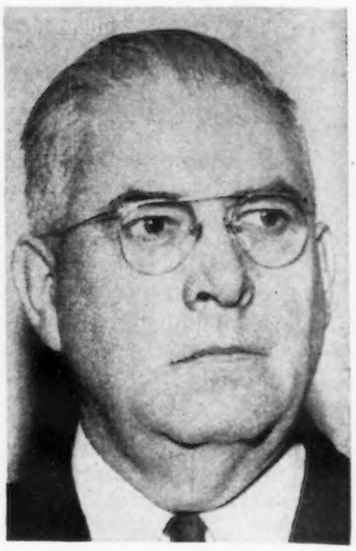
One difficulty which has shown up in times past, as a result of sad experience, is the limited usefulness of completely special machinery for products subject to style changes or for any product which is liable to meet competition from the improved designs of competitors. Care should be taken lest the investment in completely special machinery be so great as to result in heavy losses when design changes are necessary.

In view of this danger an intermediate policy can sometimes be followed. This policy employs standard basic production tools equipped with highly specialized fixtures and cutting tools, which alone have to be discarded when design changes are required.

This brings one to the subject of fixtures which are used not only on this semi-special machinery but also on standard and special. In fact, in interchangeable manufacture on almost any scale production, the fixture is an essential. It saves time and therefore cost in holding the work in the machine. It enables the work to be held firmly in the proper position and with-

W. B. Peirce
1st vice-president of ASTE

T. P. Orchard
2nd vice-president



Irwin F. Holland
3rd vice-president

out distortion, and this can be accomplished by a workman who has had only a few days or even hours of training. The highly skilled workman would otherwise be necessary. A well designed fixture therefore saves time, lowers cost and increases production. It is the tool engineer's task to so design fixtures that they will meet all these requirements to the highest possible degree. Bear in mind, however, that the elaboration and consequent cost of the fixtures must bear some proper relationship to the cost of the operation and the value of the parts produced.

Another important field for ingenuity and judgment is found in the design of dies for producing sheet metal parts. The field here is interesting and limitless. When quantity production is in prospect not only should skilled attention be given to the production of the sheet metal parts, but consideration should also be given to stamping and forming out of sheet metal or drop forging many parts which are machined from rolled stock where lower volumes of production are contemplated.

After the determination of the processes, mechanical equipment, jigs, fixtures and dies, comes the important question of cutting tools. It is not necessary to tell you of the great progress that has been made in the cutting tools themselves in the last few years. This progress has been both in the design of the tools and in the material of the cutting edge. The various carbides have undergone a development which has begun, and only begun, to revolutionize machine shop processes. The effective use of carbide tools in any progressive production plant will hereafter dominate the determination of processes, the selection of equipment and, through its influence on feeds and speeds, determine the amount as well as the kind of production equipment.

We have taken the tool engineer pretty well through the whole process of manufacture in these preceding paragraphs. The question still is open, however, as to whether the parts which have been made by the processes and with the equipment he has selected are suitable for the intended use. This brings up the important subject of inspection.

Fifteen or 20 yrs ago, the tool engineer would not have been worrying about inspection, except to make sure that his preceding work assisted in producing parts which would pass inspection at a minimum cost. Now, however, he is concerned with inspection methods themselves. He has to design various types of special gages and gaging fixtures and even, where volume of out-put warrants it, automatic inspection machinery.

We now come to assembly. War production has brought acquaintance with assembly jigs, particularly in parts which are to be electrically welded into a complete unit. For airplane frames and other war material, these assembly jigs were often of considerable size and elaboration and were of the greatest importance, both in reducing cost and increasing output. War experience will indicate new peace time possibilities for this combined use of assembly jigs and electric welding.

All of this indicates the expanding field of the tool engineer in playing the important role of reducing cost and increasing output. This role is indeed so important that on occasion it slips over the boundaries of production problems into the area of engineering design—much to the annoyance at times of the engineering designers. One of the subjects on which the designer may well give heed to the tool engineer is on the subject of dimension tolerances. Few engineers, whether engaged in designing or production, have a clear idea as to the theory of tolerances. The maximum-metal side of the tolerance insures interchangeability. It makes sure that the parts can be assembled freely if they are to be put together by hand, or with the proper degree of pressure if they are to be force fits, or with proper allowance for lubricant if they are to be running fits. The minimum-metal tolerances on the other hand make sure that the looseness is not too great for serviceability. The margin left between the maximum- and minimum-metal dimensions determines by its amount the degree to which high production and low cost can be attained.

R. B. Douglas
National secretary, ASTE

V. H. Ericson
Treasurer

W. Dawson
Assistant secretary-treasurer

The tool engineer often struggles for high production and low cost with close tolerances which he is sure are unjustified. A heart to heart conference with the designing engineer will sometimes indicate that he is at least part way right. Sometimes dimensions have been set so close that the inevitable result was low production and high cost. In such cases, consultation with the tool engineer may indicate that more or less redesign is necessary to avoid the necessity for these expensive close tolerances.

This brings up the point where the tool engineer often has something useful to say about the design of the product as well as its dimensioning. By bringing together the designing and production engineers at the closing stages of the design and at the beginning of production planning, highly useful changes can often be made in the proposed production. The tool engineer can offer useful suggestions on alterations, often minor, which will minimize machining, make for accurate, rigid holding in fixtures and provide for register points which will assure that separate operations are kept accurately in line with each other.

The tool designer thus plays a major part in producing large volumes of serviceable, useful products at low cost. He is responsible for so organizing production that the desired volume and quantity of output can be obtained by the transfer of the skills of mechanic and tool maker to jigs and fixtures, which can be used by semi-skilled operators. The tool engineer is indeed at the center of our industrial system. As a result of his work, we have higher production and good profits at low cost.

Emphasis must be placed on the fact that good production at low cost in wages per hour, is the essential factor in a high standard of living. The foundation of a high standard of living comes from greater individual output of better goods and services. To this high social end the tool engineer devotes his life.

"Profit Producers for Industry"

o o o

A. G. BRYANT
Vice-President, Cleereman Machine Tool Co., Chicago

o o o

THAT the ASTE should devote this session to the subject of profits is both significant and challenging.

No word in the entire realm of economics has more recently been maligned, misunderstood and misused. One might gather from the comments of some of our oracles that profit is some kind of a newly identified disease; that the profit motive underlies the many deficiencies in our present disturbed civilization; that it is the cause of much human suffering; that it must be cast out of our economy and replaced with some illusory subsidy, government control or legislative panacea.

Our entire industrial development of the past hundred years, with an enormously improved level of living for many millions, has been initiated and propelled by the inventive genius and the industrial leadership which had as their incentive the hope for compensation in the form of profit.

That there have been occasional examples of soulless speculators who have from time to time taken greedy advantage of their shrewd ability to exploit, is no more of an argument against the encouragement of attractive profits, resulting from sound business leadership, than is the occasional rabble-rousing labor parasite typical of the conscientious hard-working, sound-thinking American working man.

The plain economic truth is, not that there has been too much business profit, but that there has been too

little. Off the record, but well publicized, statements last fall by some government officials to the effect that business could raise wages about 25 pct with no increases in prices and still have more profit than in prewar years were obviously made in ignorance or in disregard of the facts.

Our economic salvation depends to a large extent upon a reversal of form, upon a stimulation of profits as an inducement for more work, for expanded operations and for the resultant creation of more production at higher earned wages.

That this country had a technically-trained, ingenious and resourceful machine tool industry with which to build our great war production machine was not due to the encouragement of any protective governmental policy between World War I and World War II. The industry was actually impoverished at the end of the 1930's, whereas it might have been nurtured by long range constructive policies.

Our army and navy waited until the enemy was upon us and then placed upon the small machine tool industry the burden of equipping the armed forces. And today, far from having learned any lesson from the events of the past three decades, the Government has prevented the industry, by the unfair basis of its excessive profits taxation and by renegotiation, from retaining reasonable reserves or adequate net profits.

The industry built the machines necessary to produce war equipment and more than 90 pct of these same machines can be utilized in peace-time production. The industry must therefore carry as a burden and in competition with its current production, the several hundred-thousand government-owned surplus machines. What will be the effect of this situation in the machine tool industry upon the production plants and the tool and die shops of America?

For one thing it is obvious that the users of machine tools have an opportunity without parallel to reduce their costs and increase their profits by taking advantage of the present machine tool market.

There is a recognized trade truth in the machine tool industry to the effect that the only really good customers are those plants that are already well equipped. Shops that have obsolete and worn-out machine tools have usually less progressive managements and are usually high-cost and low-profit manufacturers. They either do not have the resources or the vision or the know how of a smart shop management which appreciates that one of the best ways to assure itself of low costs and high profits is by having the latest and finest machine tools.

The industry hopes therefore that thousands of obsolete or broken-down machines now limping their way through production tasks that should be undertaken by modern tools, will be replaced with machines purchased from government surplus. Under the Clayton price formula machines may be purchased at a price level that should attract even those manufacturers who are trying to do post-World War II jobs on pre-World War I machines. Although the purchaser of a government surplus machine can secure no warranty of condition, the machine tool industry recommends to many shops that they consider buying government machines which certainly as an average will greatly exceed in productivity and useful operation, the equipment that is tolerated in many existing plants.

The installation of new machine tools in 1939 represented only about 17/100ths of 1 pct of the value of the country's manufactured products. The cost of machine tools is so relatively insignificant that its influence on the price a consumer pays for goods is almost infinitesimal. On the other hand it is obvious that without the use of such machine tools, the consumer would pay if he could afford them at all, prices for goods many times present day figures.

Of course, members of ASTE have a better appreciation than others of the economic value of machine tools in this country's future. Perhaps some of us however, understanding as we do so well the importance of the machine tool, overlook the fact that there are some in public life who are ignorant of the facts.

It would seem that all should realize that the production of more goods at lower cost constitutes America's hope for survival in the future competitive struggle. Therein also lies our hope for further raising the general standard of living in this Country. It is only by getting better products at a lower cost that more people can acquire more goods and thus improve their physical standards.

We must advance in the promotion of our private businesses by seeing that outmoded and worn-out machine tools in our plants are replaced either with good war surplus machines or with the newer models of machine tool builders.

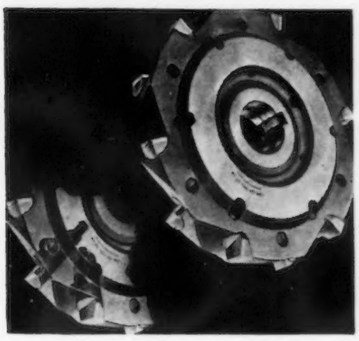
In so doing we will be playing a shrewd game typical of the traditional, ingenious Yankee. We will offer a greater challenge to our competitors; we will create new markets because of new goods that we will produce more economically. We will furnish wider employment, at higher labor rates as they are earned, and by increasing production, we will supply our fellow-citizens with an abundance of needed articles to improve our living conditions and our national morale.

New Equipment . . .

Small Tools

. . . Various developments of general utility in all types of small tools including inserted compacting dies, surface plates, face milling cutters, masonry cutting blades, indicators, dial hole gages, adjustable plug gages, reversible plug gages, dresses and many other devices are described in this week's digest of manufacturers' announcements.

SENSITIVE control of blade settings, obtained by the addition of a screw adjustment to the blade positive-locking device, is the principal feature of the redesigned type F slotting cutter announced by the *Lovejoy Tool Co., Inc.*, Springfield, Vt. When blade adjustment is required—either for resharpening or for exact control of slot width tolerances during milling—the positive-locking device is loosened by unseating a taper pin. A recessed-head screw, at the bottom of each blade, is then turned to move the blade up or retract it the exact amount required. When properly set, the blade is positively locked in the body by reseating the taper pin. Savings on carbide are said to be effected when resharpening because each tip need be moved up only a sufficient amount to be cleaned up. An additional long-life provision is the extra large tungsten carbide tip on the blades. These blades are said to be able to withstand heavy or intermittent cuts without loosening or breakage.



For fly cutting, several blades can be removed without affecting housing strength.

Plug Gage Bushings

CARBOLOY "go" and "no-go" plug gage bushings, now being carried in stock in rough form, ready for finishing for im-

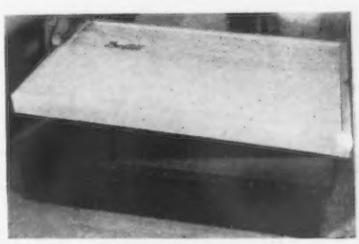
mediate shipment in 40 standard sizes each, have been announced by *Carboloy Co., Inc.*, Detroit. These range from a finished gage diameter of 0.366-0.406 to a finished gage diameter of 1.501-1.531 in. Also available now from stock are Carboloy rough ring gage bushings for gages ranging from 0.058 to 1.510 in. diam.

Carbide Compacting Dies

CARBIDE-INSERTED compacting dies which are being marketed under the trade name of Malta, have been announced by *The Jessop Steel Co.*, Washington, Pa. Production from these dies are said to be approximately 3,500,000 tablets per die, whereas, original production ran only 150,000 tablets on steel dies, using both ends. It is claimed that these carbide dies have never been reversed, nor have the presses been down because of wear or die failure. In addition to the above advantages, a better surface can be obtained on the tablets, with the elimination of lubricating difficulties. Dies are now being furnished in sizes from ⅛ in. solid drilled dies, guides and bushings to 36 in. inserted drawing dies.

Surface Plate

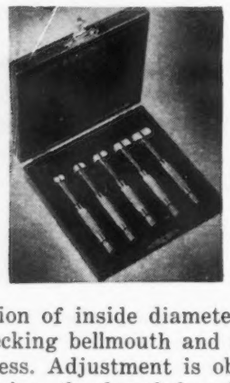
A SURFACE plate of improved design has been announced by *The DoAll Co. (Gage Div.)*, Minneapolis. The surface plate is said to be so constructed that the system of ribbing gives ample support to the working surface, the number of ribs, their placement and depth being carefully engineered so as to prevent any appreciable deflection in normal use. Three feet so positioned as to insure a minimum of sagging are used to support the surface plate. These plates come with removable handles and plywood cover. The inside of the cover is lined with a heavy oil-saturated felt so that the plate is well protected from rusting when not in use. Two features make these plates outstanding. The underside of the ¾ in. overhang is machined all around. Thus work or fixtures can be easily and firmly



clamped to the surface plate. The edge of the working surface has also been drilled and tapped on 2 in. centers all around to enable the user not only to make up gages and comparators, but to mount special fixtures of his own design.

Adjustable Plug Gages

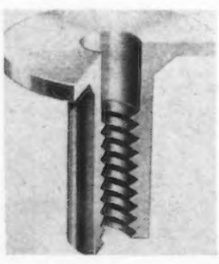
A LINE of adjustable plug gages covering all diameters from 0.375 to 1.500 in. has been announced by *Barnaby Mfg. & Tool Co.*, Bridgeport, Conn. Known as Barnaby inside adjustable gages, these tools are said to be used both for



inspection of inside diameters and for checking bellmouth and out-of-roundness. Adjustment is obtained by turning the knurled end-piece, which actuates the one-piece collet-type head to open or close the split anvil. The gage is set to the required diameter by a micrometer or a master gage, and the adjustment is held securely. All working parts are of hardened alloy steel, precision-finished throughout and hard chrome plated for extra-long service life.

Washer Head Rivnut

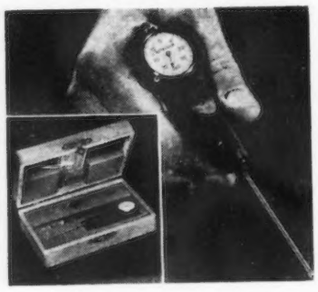
A WASHER head Rivnut, the one-piece internally threaded and counterbored tubular rivet which can be upset or headed from one side, has been announced by *The B. F. Goodrich Co.*, Akron, Ohio, for use in tractor, truck and house trailers for fastening plywood interior walls to steel sections. Advantages claimed for this



device as follows: (1) will not vibrate loose; (2) easier to install than either wood or self-tapping screw; (3) useful as a nut plate for fastening interior trims; (4) fits flush with plywood so clothing or goods will not catch on it, and (5) will not pull through plywood, because of large diameter head.

Dial Hole Gage

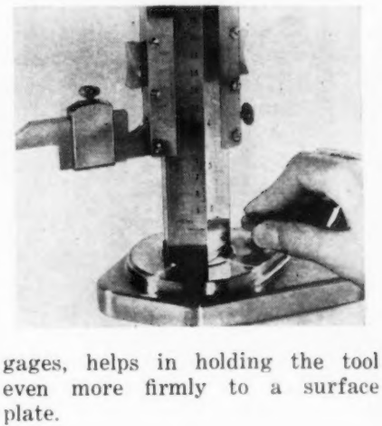
A DIAL indicator gage for extremely small holes has been announced by *Federal Products Corp.*, Providence. This gage is claimed to gage holes as small as 0.122 in. and up to 0.250 in. ID, and it will also gage these small holes up to depths as great as 2¼ in. Variations within the range 0.122 up to 0.250 in. are obtained by the use of a set of twelve interchangeable gaging plugs. While this gage is said to be exceptionally accurate and extremely sensitive to very fine dimensional variations, it is also a sturdily built instrument, and does not call for skilled manipulation or the fine sense of touch of the highly skilled inspector. This small hole gage is regularly furnished for use as a single-purpose gage. If new dimensions call for additional



plug sizes such plugs are readily adapted and calibrated to the instrument by using a micrometer caliper. Either a regular micrometer or an AGD ring gage is used as reference master for establishing and checking the zero setting.

Height Gage

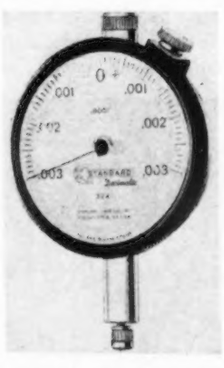
FOR the precision inspection, layout, scribing and checking of large size jigs, fixtures, dies and castings, the 48-in. Chesterman Height Gage has been announced by *The George Scherr Co., Inc.*, 200 Lafayette St., New York 12. This height gage is said to be sturdy, well constructed, and to employ an extra large vernier measuring 2.450 in. long, as compared to the ⅝ in. vernier commonly used on conventional height gages. It is claimed that this extra long vernier enables the toolmaker to produce consistently more accurate work. The graduations are made on a heavy triangular beam and the quick adjustment is obtained by simply pressing two lugs. The fine adjustment, which appears in the base is an outstanding feature since in making adjustments, the downward pressure on the screw instead of causing tilting and unintentional moving of the height gage, as may occur with ordinary



gages, helps in holding the tool even more firmly to a surface plate.

Dial Indicators

FOR tolerance checking the Decimatic series of indicators has been announced by the *Standard Gage Co., Inc.*, Poughkeepsie, N. Y. These indicators are characterized by having dial markings in decimals, directly comparable to blueprint tolerances. Important mechanical and practical features are also presented. Working advantages are said to include the modified range, from approximately "20 min of" to "20 min past" on the dial. This range, while adequate for all but coarse tolerance checking, eliminates the possibility of failure to notice a complete revolution of the hand. Also, these instruments are claimed to be free from noticeable whip and waver of

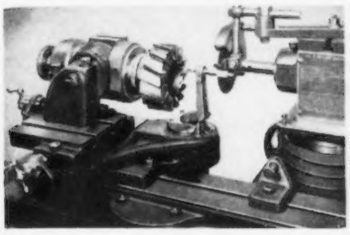


the hand with consequent reduced nervous strain on the operator. Consistent repeatability of an unusually high order and especially good accuracy are claimed by the manufacturer for these indicators.

The instruments operate under exceptionally low tension.

Grinding Attachment

A No. 2 radius grinding attachment, for use on Cincinnati No. 2 cutter and tool grinders, has been announced by *The Cincinnati Milling Machine Co.*, Cincinnati 9. This attachment, it is claimed, will grind 0 to 1-in. radii on cutters from 4 to 12-in. diam, having flute lengths up to 3 in. Adjustment to the desired radius is obtained through a micrometer gage, inserted into a tapered hole which is bored concentric with the swivel point of the attachment. The micrometer gage has a range of 1 in., and pivots 90° to positive stops. Zero reading in both positions indi-



cates that the junction between the face and diameter of the cutter will swivel directly above the center of the pivot; or in other words, zero radius will be obtained. Both slides, which carry the cutter mounting assembly, can be independently operated by a crank and screw.

Reversible Plug Gages

APPLICATION of Carboloy cemented-carbides to gaging equipment has been announced by *Lincoln Park Industries*, 1719 Ferris Ave., Lincoln Park 25, Mich., in a line of reversible wire type plug gages. It is claimed through the use of cemented-carbide, life of the gaging members is increased to at least 50 times that of those made of steel, and because of the factor of wear-resistance, users can disregard the usual allowance for wear and take advantage of full print tolerances. It is also claimed that the use of Carboloy provides assurance that members will be non-corrosive and will not rust in the handle; that they will be non-magnetic, eliminating any possibility of the gages picking up chips or other metallic substances which might scratch the work. The members are easily adjusted for length by loosening nuts in the ends of the handle, and can be cut

off as worn or reversed in the handle as desired.

Column Press

AN air-operated column press has been announced by *Mead Specialties Co.*, 4120 N. Knox Ave., Chicago 41. This unit, which is claimed to deliver a ram pressure of 3000 lb on 110 lb line pressure, is particularly useful for small to medium runs where it is desirable to leave fixtures permanently mounted to base. With this press, it is said successive operations may be quickly performed by simply swinging the ram over desired fixture, raising or lowering it to the correct height by means of the raising screw, and locking it in place with the two drawbolts. In some cases a dozen or more small fixtures may be left permanently set up, ready for immediate use when needed. For many jobs involving the cold-forming of metal, the slow squeeze of this press is

more satisfactory than the sharp blow of a punch press or kick press, because of the reduced tendency to fracture the metal.

Reversible Thread Gages

A TWIN line of reversible thread gages has been announced by *Size Control Co., Div. of the American Machine & Gage Co.*, 4638 W. Fulton St., Chicago. These gages, designed to provide maximum gaging economy, feature green Go, and red No. Go ends reversibility of plugs and six times longer service life. Steel plugs are furnished with a hardness of 62 RC, lapped to a finish of 1.50 mi in.

Ball Sorting Gage

THE P&W model BE-748 Electrolimit Ball Sorting Gage, announced by *Pratt & Whitney, Div.* Niles-Bement-Pond Co., W. Hartford Conn., is said to provide a fast and accurate method of quality inspection, by mechanical operation, of small lots of precision balls. The tear drop in the ball slide is claimed to allow positive positioning of the ball between the T-C button on the anvil and the diamond gaging

point, when the ball slide is in the gaging position. The ball slide can be conveniently operated to and from the loading position by the right index finger, the right thumb depressing the ball slide release lever. The sorting tube levels are conveniently positioned for the left hand and allow simultaneous operation with the functions of the right hand, thus providing for rapid operation.

Wheel Dressers

A LINE of Yellow Head dressers and cutters has been announced by the *City Machine Co.*, Piqua, Ohio. Included in this line is the self-lubricated Yellow Head dresser. The rotating parts of this dresser are said to be lubricated by graphite, sucked from a magazine in the handle as the cutter and shaft rotate. It is claimed that this line of equipment has been helping manufacturers to increase production and decrease the cost of maintenance of grinding equipment.

Continuous Gage

THE model D-10 Electrolimit Continuous Gage has been announced by *Pratt & Whitney, Div.* Niles-Bement-Pond Co., W. Hartford, Conn. This gage has a throat depth of 10 in., which, it is claimed, makes it possible to measure to the center of strip material up to 19 or 20 in. in width. With narrower strip material, this gage will allow the full width of the strip material to be measured. The deep throat

casting can be assembled at the factory to any standard model D gage. This unit then can be assembled to the present designed mill mountings where the rail is mounted vertically.

Accessories for Gage

ACCESSORIES that increase the applications of Cadillac's Pla-Chek gage have been announced by *Cadillac Gage Co.*, 20316 Hoover Rd., Detroit. The following accessories are now furnished as standard equipment on this surface plate measuring gage; (1) a 3-in. riser that raises the Pla-Chek above the surface plate so that it may be used in any position on the surface plate; (2) a reverse checking plate for use in checking the under surface of parts; (3) a

hardened button on the 3-in. riser plate located in line with the reverse checking plate makes it convenient to quickly and accurately set inside micrometers, calipers, or any type inside dial gage, as well as planer gages to any size from zero to 2 in., and (4) Pla-Chek is durable, the measuring bar and lead screw are hardened to 63 RC.

Face Milling Cutter

USING solid carboloy blades, a well-designed face milling cutter has been announced by the *Super Tool Co.*, Detroit. It is said to be a most efficient tool and to perform in a most satisfactory manner. Only one type of body is required for machining any and all materials, the only variation being in the angles ground on the solid carbide blade, which can be readily altered to suit any specified material. An outstanding feature of this tool is that it permits the use of unbrazed carbide metal which is generally conceded to be definitely superior as to grind life as well as vastly more rugged in resistance to cracking, chipping and breakage than a brazed tool or blade. Simple

jigs can be obtained for the easy sharpening of the carbide blades to suit all types of work.

Hand Stamping Jig

A HAND stamping jig designed to provide means for marking a limited quantity of engine crankcase dip sticks, has been announced by *The Acromark Co.*, Elizabeth 4, N. J. It is said that the tool lends itself well to applications of this type, requiring a fair degree of accuracy in the location of stamping, especially on jobs where quantities are not excessively large, in which case, automatic power equipment would be indicated. Individual markings accomplished with this equipment create a minimum of destruction as compared with entire marking by one press stroke. The tool is portable and since it is mounted on a heavy steel base or anvil, may be set-up for use on any type of table or bench.

Masonry Cutting Blades

AN amazing post-war advance in abrasive masonry cutting blades has been announced by the *Champion Mfg. Co.*, 1307 Washington St., St. Louis 3, and is being placed on the market under the name of Jade Blades. A distinctive, identifying feature of this blade, is said to be the exclusive jade color. This blade, it is claimed, provides longer life, lowest cost per cut, quick cutting, a blade to cut every

type of masonry efficiently, and elimination of operator eye-strain through the exclusive safety of jade color. These blades are available in 12 and 14 in. sizes to fit any type masonry cutting saw. Blades are equipped with blotters for safety in operation and steel centers for efficient operation and protection of machine shaft.

Tool Makers Gage Blocks

A TOOL makers set of five Ellstrom Master gage blocks, said to be unconditionally guaranteed accurate to plus or minus eight millionths of an inch, has been announced by the *Dearborn Gage Co.*, 22038 Beech St., Dearborn. The combination is claimed to be especially assembled for individual ownership by tool makers, machinists, apprentices and hobbyists. This set

is available in 0.0625, 0.125, 0.250, 0.500 and 1 in. This small precision gage set will make 31 combinations in 1/16-in. steps up to 1 15/16 in. All gaging surfaces are chromium plated.

HOW METAL QUALITY IS DEVELOPED FULLY IN THIS INTRICATE-SHAPED AUTOMOTIVE

FORGING

This macro-etched cross section of steering lever forging illustrates the metal quality that has been developed fully by two-stage forging production. Note the concentration of fibre-like flow-line structure that gives this part the required strength and toughness that assures safety.

Safety in the operation of an automobile begins with safety in steering. Forged steering levers provide a greater factor of safety because the fibre-like flow-line structure of steel is utilized fully by the forging process to concentrate strength and toughness at points where greatest shock and stress occur. This forging exemplifies the fact that T & W forgings, formed to close tolerances, reduce waste metal and require less time to machine and finish. Ask a T & W Forging Engineer about forging complex parts, and to show you why T & W forgings usually cost less at the point of assembly.

SECOND STAGE OF PRODUCTION

This is the beginning of the second stage of production. The semi-finished forging is now subjected to several successive blows in the hammer, which further improves the quality of the metal and compels it to conform exactly to the die impressions for every section of the part. Metal not required to fill the die impressions is trimmed off with a set of trimmer dies in a mechanical press. Thus, a finished steering lever forging is produced to close tolerances that requires a minimum of precision machine work.

T & W FORGINGS USUALLY COST LESS at the Point of Assembly

The complex shape of this automobile steering lever requires two stages of forging production to develop the maximum metal quality required for safety and dependable performance. The first stage of production includes the following steps:

FIRST STAGE OF PRODUCTION

1. Shearing, from bar of steel, a piece of proper length for raw forging; drawing tong hold and fullering, or gathering the stock, to make it ready for the first impression in the blocking dies.

2. Blocking or forming the part into its first definite shape consists of several successive blows in the hammer with closed impression dies, which compel the hot metal to flow into, and completely fill the die impressions for every section of the part. This produces flash or metal that is not required to fill the die impressions. Such metal is trimmed off with a set of trimmer dies installed in a mechanical press.

3. The semi-finished forging trimmed of flash is put through a bending operation which straightens out the cross arm portion and prepares it for the impressions in the finishing dies.

TRANSUE & WILLIAMS

STEEL FORGING CORPORATION • ALLIANCE, O.

SALES OFFICES: NEW YORK, PHILADELPHIA, CHICAGO, INDIANAPOLIS, DETROIT AND CLEVELAND

Assembly Line . . .

STANLEY H. BRAMS

• The Chevrolet light car will likely sell for about $800; production facilities will cost $50 million . . . Neither the new Chevrolet nor the new Ford junior model will appear for a year . . . Fisher will erect a big new stamping plant in Detroit.

DETROIT—The big news of the week, of course, was the formal confirmation of a light car project in General Motors. The Chevrolet Div. has outlined a manufacturing program for its new light car division, to be concentrated in the suburbs of Cleveland, and to be fairly selfcontained.

Except that the Chevrolet light car division is under the jurisdiction of M. E. Coyle, general manager, and that the product is being sold through the Chevrolet field organization, the operation will be independent of its parent. The company will build motors, axles, transmissions and other component parts, will do its own stamping—first time since Fisher became a part of General Motors that it was not utilized for production press work—and will assemble as well, all in the Cleveland environs.

This car, indications are, is aimed at a price class around $800, somewhat more than 15 pct below the as yet unannounced prices at retail of the 1946 Chevrolets. The production potential of the new division is as yet completely a secret, but output in the neighborhood of 5000 units a week would not be a surprise.

Speaking of surprises, General Motors has one or two more up its sleeve. The most interesting of these probably is the fact that a new large stamping plant will be built by the Fisher Body division in Detroit. The unit will be on a par with the Fisher stamping facilities at Grand Rapids and Cleveland, and will be designed, it appears, to furnish the enlarged requirements of Pontiac, Buick and Oldsmobile. In addition, Buick has purchased the Grand Blanc tank plant, near Flint, which it operated during the war, and will use this for press work. Along the same line, Buick has just completed purchase of the aluminum foundry within its grounds at Flint, something which was not at all unexpected.

Word about the Chevrolet light car inevitably brings up the question of a Ford light car, experiments toward which actually started the Chevrolet project in motion in the General Motors board. The Ford light car, about which rumors first began to circulate late in 1944, is still about a year away from production—as is the Chevrolet. Some tooling has been ordered on it, however, in contrast to the inquiry stage of the Chevrolet project. In the confusion of reconversion out at River Rouge, however, and in the haste to get going on orthodox 1946 models, the light car project was temporarily sidetracked. Now that the Chevrolet light car is out of the bag—or in the bag, depending on how you look at it—the Ford job is being speeded up once more. Over the weekend it was announced that a light car division has been established at Ford, its aim being to get a car on the market at least as soon as Chevrolet.

FORD, it should be noted, appears to have gone out of the engine rebuilding business for good, having transferred all such activity to dealers desiring to take it on. Today about 185 dealer establishments are rebuilding engines, handling all the way from 100 to more than 1000 per month.

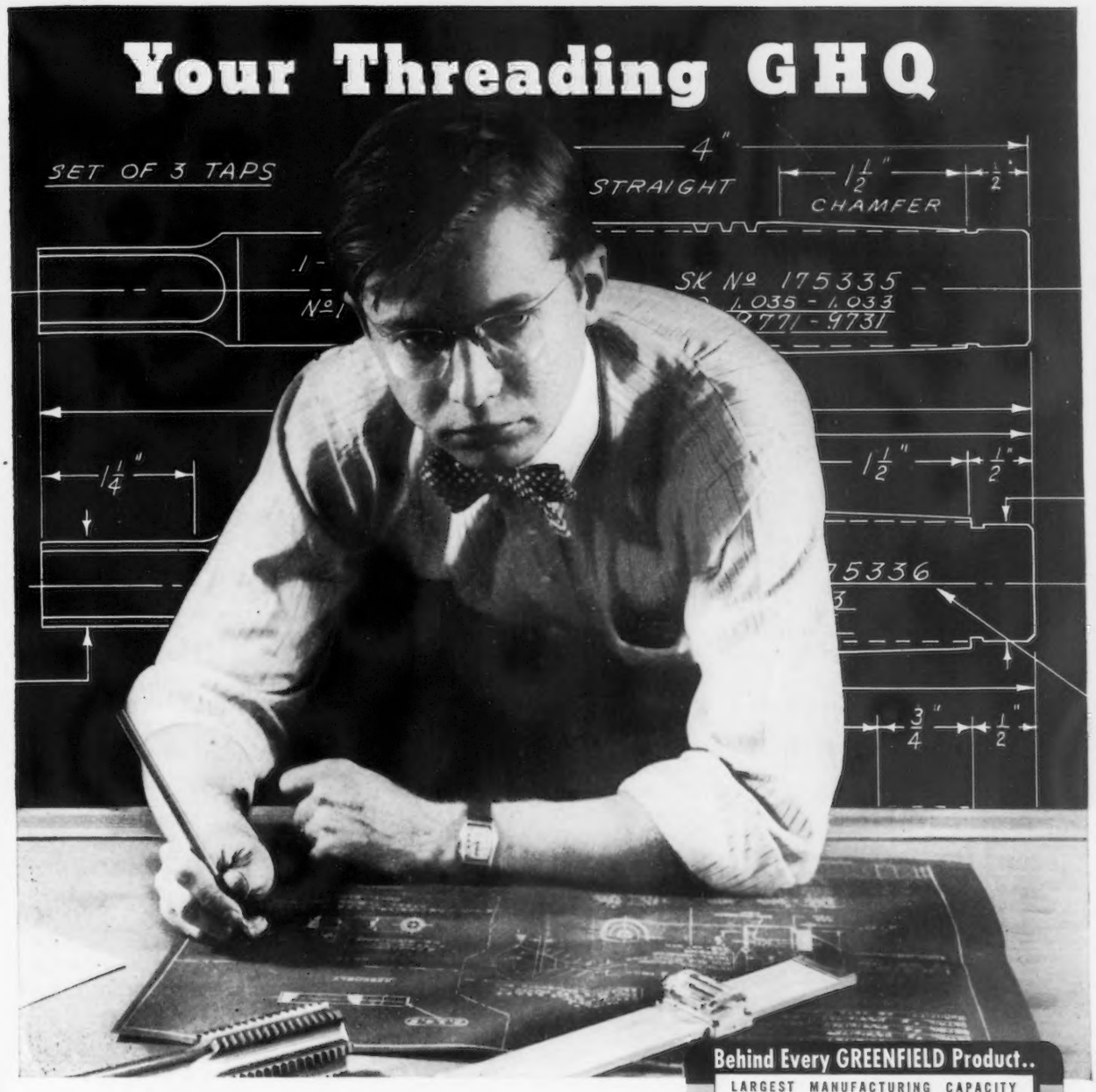
With the number of rebuilds per year in the forward period estimated at upwards of 35,000 units per month, this engine rebuilding field may be a fruitful one for general machine tool sales. For example Ex-Cell-O has recently developed a unit priced in five figures which rebores four cylinder holes simultaneously to precision standards; and several of these are on order or have been installed in the larger Ford engine rebuilding shops. Other machine tools for valve facing, crankshaft grinding, valve grinding and other such operations are required in this remanufacturing process and are being bought by dealerships so engaged. While some of these rebuilding operations are small, others are really in the class of large scale enterprises—an establishment set up to rebuild 500 engine units a month and cost anywhere from $60,000 to $100,000; and at least one establishment is now being tooled with capacity of 3000 engines per month.

Any dealerships desiring to go into such program may do so. Naturally they are expected to maintain the same quality standards which prevailed in the River Rouge rebuilding operations before the war; and the exigencies of competition and of the new motor warranty which they are required to certify backs up the Ford quality requirement. Dealers set their own prices on their rebuilding jobs; they run today all the way from $60 to $78, somewhat above the standard prewar price of $49, but not too much considering the increased costs of materials and labor during the past five years.

PLANS for expansions ahead inevitably pose the question of worker output per man. The implications of labor productivity in the automobile industry were recently discussed before the Conference Board by Andrew T. Court of the Labor Economics Section of General Motors Corp., who said that in one comprehensive G.M. study 1000 man-hr of direct labor produced 63 pct as much finished material in 1945 as it did in 1941—the 37 pct decline in production supporting recent statements from Henry Ford II that his company has suffered a 34 pct decline.

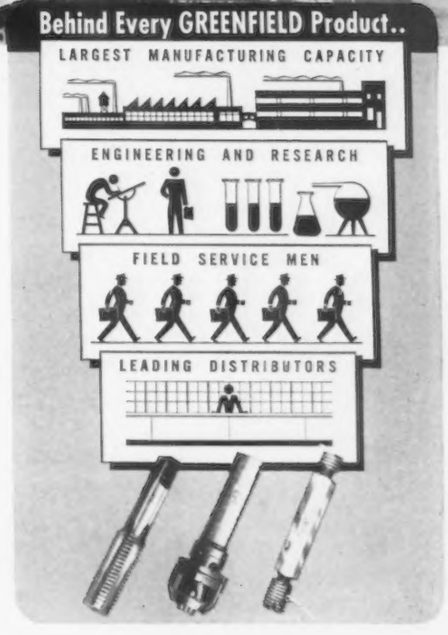
G.M. studied the records, according to Mr. Court, to find the cause

Your Threading GHQ



When the man in charge of "operations" runs into a new problem, he usually looks to "General Headquarters" for help . . . In threading operations on all industrial fronts, the man with a problem is able to go to the engineering department of the Greenfield Tap and Die Corporation for expert help. "Greenfield" engineers can focus on any problem the cumulative "know-how" of years of pioneering leadership in screw thread research.

"Greenfield's" threading "GHQ" helps solve specific day-to-day problems for users of threading tools, and also carries on an intensive continuing program of research that benefits all users. *If you have a threading problem, get in touch with "Greenfield" screw thread engineers through your "Greenfield" distributor.*



GREENFIELD

GREENFIELD TAP and DIE CORPORATION

GREENFIELD, MASSACHUSETTS

of this productivity loss, and concluded that war and personnel problems had a fair amount to do with it. By comparing production records of more experienced with less experienced men, it was found that seven percentage points of the total decline had resulted from a higher percentage of green help in the later period. A second factor that could be estimated was the loss in productivity of direct labor resulting from poorer organization and tooling incident to less experienced supervision and non-productive help, which accounted for eight percentage points of the total decline. One pct resulted from interruptions in the flow of material.

The remaining 21 pct reduction in worker efficiency was attributed by the management to reduced productive worker effort. This case study took place in a plant which made a heavy machine gun through the war, but other confirming examples were found.

At Buick, for example, a standard of 45 cores per 8-hr shift was set for aircraft engine cylinder castings in the aluminum foundry. But production was held down by the two-man teams, the Court paper said, to 22 cores per team, even though the first few days of operation had seen teams producing over 30. After discharge of two shop committeemen said to be primarily responsible for the slowdown, production jumped to an average of 45 cores per shift, and within a few months reached a level between 80 and 90 cores.

The paper by Mr. Court had some interesting observations on the inter-relationship of employment and wages.

"Flat hourly wage rates and high employment are incompatible," he asserted. "When persons of very limited capabilities are injected into a group paid a flat hourly rate there is a very strong tendency for the group to reduce their output to the level of the slowest workers. . . . It is more economical to have four good men on the job than to have four good men and one slow man all working at the slow man's rate of production. High employment and high real wages can only be accomplished simultaneously if incentive wages make it possible to employ less efficient workers without slowing down the more able persons on the job. Incentive plans offer the only method through which wage increases can be made without raising costs and prices."

Board Grants Foremen Right to Union Vote

Washington

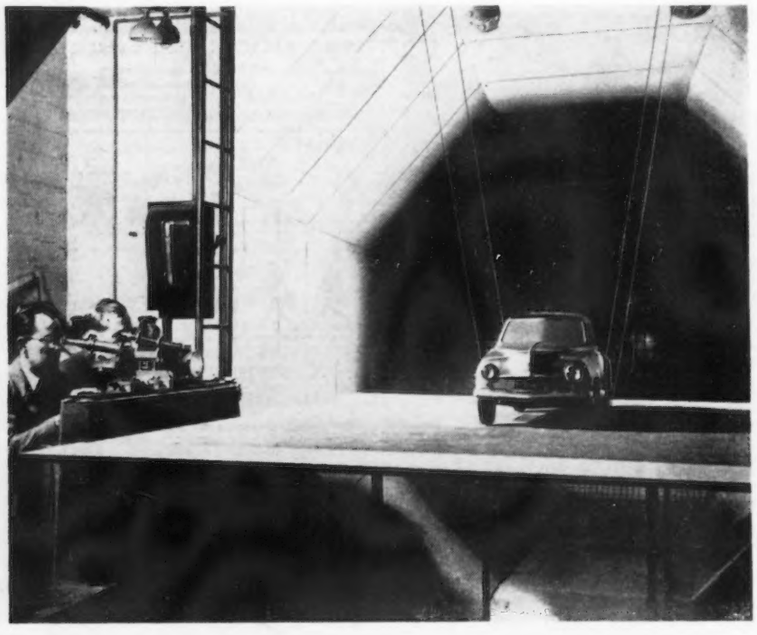
• • • **Further penetration** of foreman's union in the steel industry was assured through a National Labor Board decision and direction announced on Apr. 15. Rejecting company arguments, the board ordered that an election be held within 30 days on a petition of the unaffiliated Foreman's Assn. of America, Chapter 178, to be the bargaining unit representing supervisors at the two Battle Creek, Mich., plants of the American Steel & Wire Co. Initial board recognition of a foreman's union in the steel industry was made recently in the Jones & Laughlin Steel Corp. case.

In the American Steel & Wire case, the board said the company had refused to grant recognition to the union as the exclusive bargaining representative of the supervisory employees on the ground that supervisors are a part of management. In its motion to dismiss the petition the company argued that the supervisors are not employees within the meaning of the act. The board declared that the company's arguments in support of this contention were fully considered in several recent decisions in which the board held that foremen are employees.

"The company's argument with respect to the union's possible lack of independence," said the board, "is no longer material since our decision in the Jones & Laughlin case wherein we held that this board has no power to limit the choice of a collective bargaining representative for a unit of a foreman to an indeunaffiliated foremen's union."

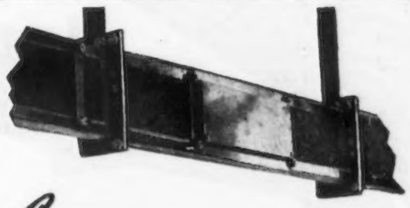
As in similar previous cases, board member Gerald D. Reilly dissented from the board's decision.

NEW STUDEBAKER? *This quarter-size model of a postwar automobile may be the 1947 Studebaker, which will go into production shortly and will have its first showing shortly before dealer assemblies. The illustration shows the model set up in a University of Michigan wind tunnel, where technicians are taking telescopic sights on suspension wires. By measuring the model's drag at varying wind speeds, researchers calculated the resistance of the design.*



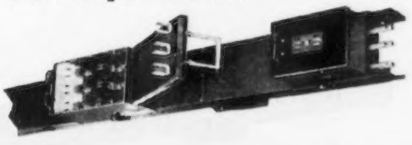
Consider these important facts...

...when you're deciding which Duct for your plant!



Compare **...this Square D Saflex Feeder Duct performance with other Duct**

Temperature rise 50% lower than for other totally-enclosed busses of equal copper cross-section and rating. Balanced voltage drop of only 1.8 volts per 100 feet.



SAFLEX PLUG-IN DUCT . . . Running Mate for Saflex Feeder Duct

Permits plugging in machines where and when you want them. Units are easily attached and disconnected. 100% salvage for re-use.

All Feeder and Plug-In Duct is *NOT* pretty much alike...

Performance, not Original Cost, is the prime factor in buying the right duct...

You have a right to expect the duct you buy to pay its own way in terms of the flexibility and increased efficiency it provides. Any good duct will do that. But a careful inspection of SAFLEX DUCT will prove that there's a vast difference in the *degree* of efficiency.

Any duct installation represents a fairly substantial investment . . . substantial enough to justify a thorough comparison before purchase. We not only welcome such a comparison—we urge it.

SQUARE D COMPANY

DETROIT • MILWAUKEE • LOS ANGELES

Washington . . . .

L. W. MOFFETT

• WAA revises regulations to speed surplus property sales . . . Decentralization to regional offices gives them more power in developing disposal projects.

WASHINGTON—Striving to unload the bulk of surplus property before new production begins to catch up with demand, the War Assets Administration has issued a series of sweeping revisions to existing regulations designed to simplify the procedures under which prospective buyers may participate in surplus sales programs.

While basic policies will still be set in Washington, sales operations have been decentralized to the 33 regional offices. Previously, sales programs were worked out in Washington, without regard to conditions in the areas where the property was to be sold.

Under the new regulations the regional offices have been given wide discretion in the development of sales projects.

Surplus property will be disposed of by any approved method which is most readily adaptable for the particular commodity to be offered, but fixed price sales will be used in preference to all other methods.

For both national programs and regional sales projects fixed-price sales will be used when property is in new condition, is available in inventory in large quantities, and is either a standard commercial item or is readily marketable. This method may also be used whenever property, new or used, can best be moved in this manner.

However, with the accent on speedy disposal, the following additional methods of disposal may be used: Sealed bid offerings; spot sales; public auction sales; site sales; negotiated sales; industry agreements; dealer agency agreements; leases and loans.

National sales programs will be set up by WAA if:

(1) The commodity to be sold is in short supply and the reported cost of the property is $1 million or over.

(2) If the regional office determines that the amount of the property is too great to be absorbed in that region and requests that the program be handled by the national sales office in Washington.

(3) The same item appears in more than one region and the quantity in each of two or more regions is valued at $500,000 or over.

In practically all other cases sales projects will be developed and put into effect by the regional offices.

Distribution among trade levels will be set in Washington for each nationally planned sales program likely to be overordered, based on the percentage of the commodity normally distributed to each level.

Under the new setup, regional offices will not take orders for more goods than are available, as had been done in the past. This overselling resulted in considerable delay, disappointment on the part of prospective purchasers, and uneven distribution.

On national programs the regional offices will be responsible for meeting quotas assigned by the Washington office and must report to headquarters on the progress of such programs. The regional offices are permitted to review all sales operations for the purpose of recommending changes in policies, procedure or methods, or devising new ones.

Regional offices can set their own minimum quantities based on the experience of the trade in individual localities, rather than have these minimums set by remote control from Washington. Minimums will now be set low enough to permit small retailers to buy directly from WAA.

Inter-regional offices are also being established to coordinate sales activities and endeavor to procure goods held by any of the regions for interested buyers in a particular region.

The following order of priority will be used in planning national sales programs and regional sales projects:

(1) Perishable goods subject to spoilage if not sold immediately, chemicals, etc.

(2) Items in short supply which are held in quantities which are suitable for sales planning.

(3) Seasonal items held in quantities which are suitable for sales planning.

(4) Large quantities of commodities which are not critical but are readily marketable.

(5) Large quantities of commodities for which there is no ready demand.

Continuous sales effort will be given to items coming within the following classifications:

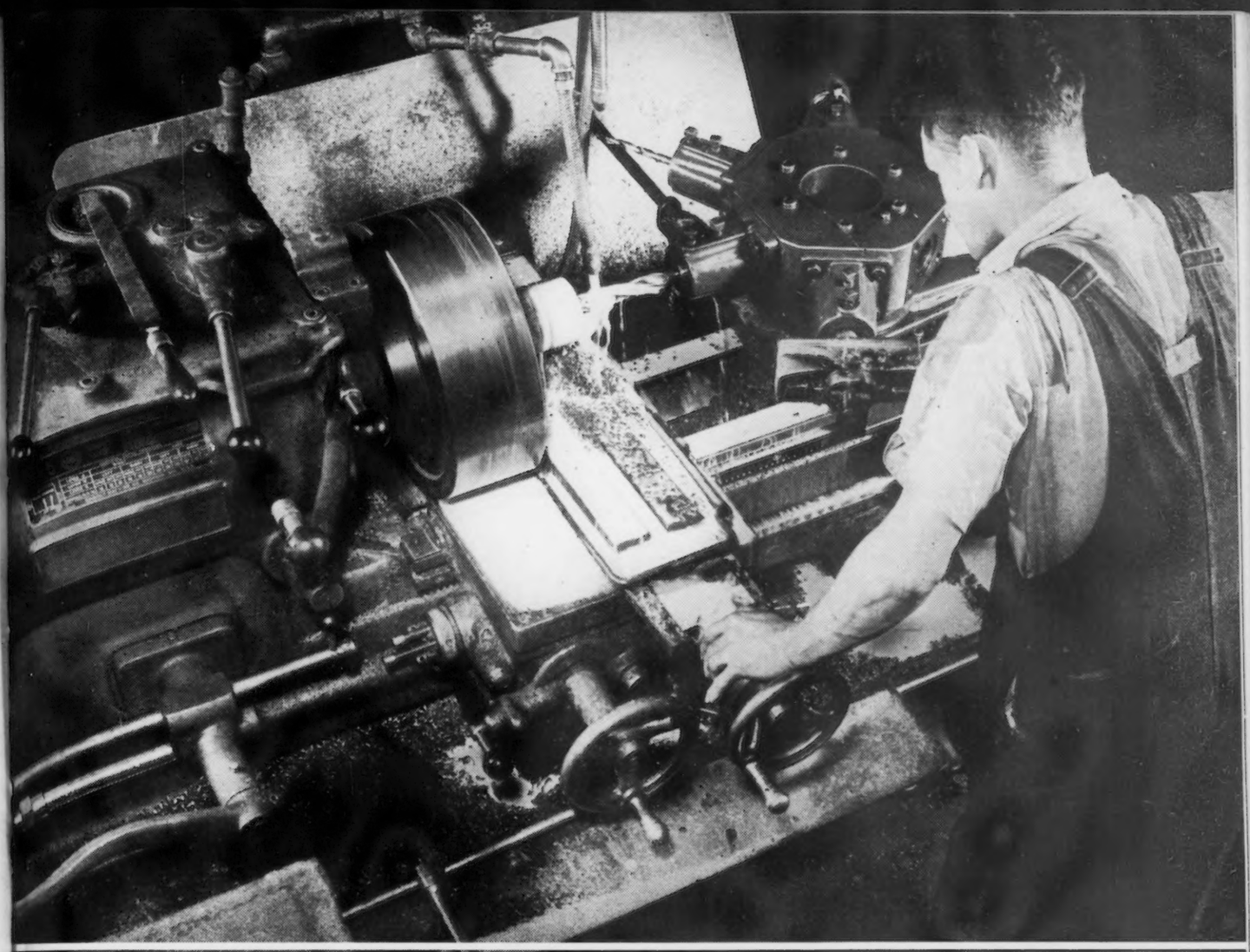
(1) Job lots. Single lots, containing several different classifications of items may be sold without detailed pricing of the separate items in such lots.

(2) Line items of $300 or less. Regional offices will screen inventories for such items at least once a week, and will group them into lots and sell them by any of the approved methods and to any level of trade.

Perhaps the most important changes put into effect by WAA relate to the distribution of consumer type surpluses. It is estimated that approximately $1.2 billion worth of readily salable consumer surpluses have yet to be sold. As of March 31, some $775 million worth of goods in this category had been disposed of.

In the past, consumer goods had to be sold on a national programmed basis to restricted classes of trade under the provisions of Special Order 24. This order has now been revised to permit additional methods of sale, and to permit sales to a wider range of buyers, including industrial users.

Under the revised order, prices



DRILLING AT *297 S.F.P.M.*

SUNOCO EMULSIFYING CUTTING OIL

Maintains Tool-Life at High Cutting-Speeds

Fewer tool-resharpenings, greater accuracy, better finish . . . some of the reasons why Sunoco Emulsifying Cutting Oil is recognized as an outstanding cutting lubricant, wherever machine tools are operated.

For example, here is a case of drilling at relatively high surface speed, in which Sunoco is used:

Operation: Drilling and reaming a troughing-roller.
Machine: Gisholt No. 5 ram-type universal turret lathe.
Material: Cast iron.
Feed: .015".
Cutting Speed: 297 s.f.p.m.
Cutting Lubricant: 1 part Sunoco to 20 parts water.

Sunoco meets the modern demand for a cutting lubricant that will cover the widest range of turning, drilling, milling, grinding, and other operations. Easy to use, Sunoco forms a stable emulsion with water.

Sunoco cools and lubricates both the work and tools, flushes out chips, preserves cutting edges. Sunoco makes possible a high rate of production, continuous operation at low cost. Call the Sun Cutting Oil Engineer — he can help you with your new metal-working problems.

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INDUSTRIAL PRODUCTS

for goods being sold under the fixed-price method of sales will be established as close to the current market price as possible. They will be attractive enough to move the property and compensate for any unusual features of the property which may add to the difficulty of reselling. In general, prices will be set for two levels of trade, wholesale and retail. The differential between those prices will correspond to that which is normal in the trade, and will reflect the differences in the cost of the distributive function performed. Sales under such differentials will be either national or regional program sales. In cases where program sales are not feasible, and in other special instances, sales officers have been given new authority to set a uniform price for all purchasers. Such cases may occur where a commodity normally moves predominantly from the manufacturer to wholesalers and industrial users, or in connection with the clearance of depots, warehouses, ships, or command installations.

The minimum quantity offered for sale will be of a size which will enable small independent retailers to participate. Such minimum quantities will be larger when (a) large quantities of merchandise are packaged in military cartons and it would be uneconomic to repackage the property to provide for sales in smaller quantities, or (b) it is necessary to consolidate several packages to assure an equitable or appropriate distribution of the size range of the property. In program sales, the price on the minimum quantity offered to small independent retailers is known as the base price.

In program sales, a larger minimum quantity applicable to the wholesale trade will be offered to wholesalers who agree to use their best efforts to sell to small independent retailers. These changes affecting small business are in line with the provisions of the Surplus Property Act.

The following conditions to be observed by the classes of purchasers listed below are also set forth in the order:

(1) Sales may be made exclusively to the original producer of the surplus property only when the original producer can perform certain necessary functions, such as repairing, rehabilitating, sorting, grading, or testing, more effectively than the disposal agency or other classes of purchasers.

(2) Manufacturers who perform the distributive functions of serving small independent retailers may buy as wholesalers under program sales, subject to the rules applicable to wholesalers.

(3) Wholesalers and manufacturers who own, operate, or control retail stores are required to buy as retailers, under program sales, for their company owned or controlled retail stores.

(4) Buying offices of associated groups of retail stores operated on the voluntary chain system of buying will buy as retailers under program sales.

(5) Commercial exporters and purchasing commissions representing foreign governments are permitted to participate as wholesalers under program sales, except that items in critical short supply in the domestic economy may not be exported.

(6) Industrial users, which normally purchase property for their own use and not for resale, are permitted to participate in program sales at the retail level or at the wholesale level, if this class of purchaser customarily buys from manufacturers at the same price as wholesalers. Provided, that surplus property bought in this manner is not resold in its original form except after incorporation into an end product.

(7) Purchasing agents, including resident buyers, commission men, brokers and other agents may purchase surplus property only in the name of the principal they represent and at the level of distribution of the principal.

(8) Purchasers who may participate in program sales are also eligible to acquire property by any other method.

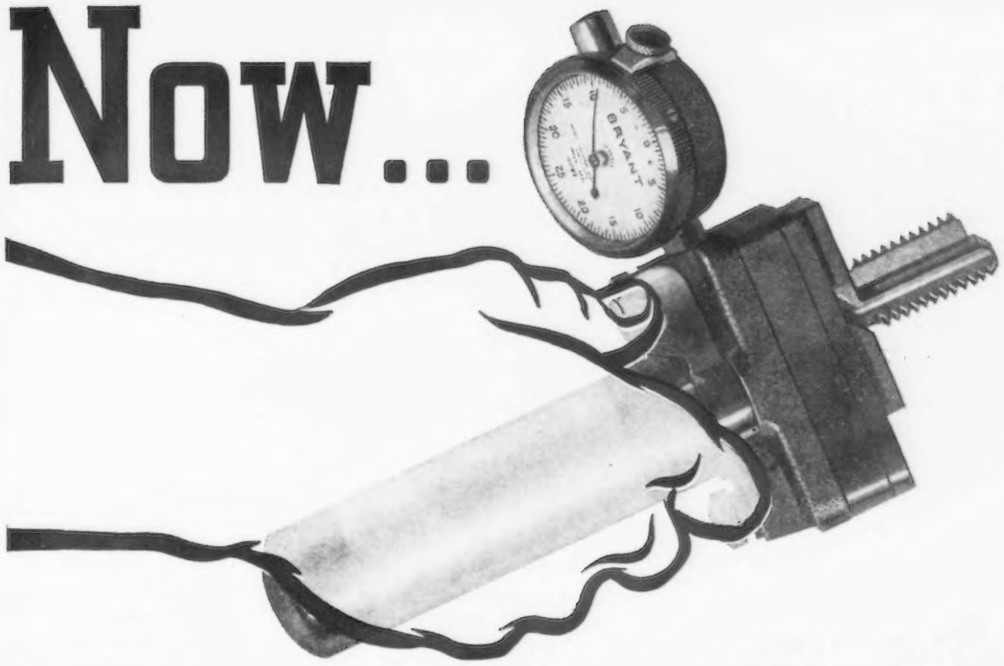
(9) Persons buying for their own personal use may participate in sales programs only when the property is offered in suitable lots or units under circumstances which will not complicate the work of disposal or where sales to ultimate consumers, for example through rural farm auctions, would be more effective than offering by other methods.

WAA instructed sales officials to avoid the adverse effect of selling surplus property on new production, employment, and financial position of a company or industry.

THE BULL OF THE WOODS — BY J. R. WILLIAMS

I'LL GO! I'LL GO!
NO, I WAS GOING-- I AM GOING!
THEY GOT A SUPERINTENDENT JOB OPEN AN' ALL THEM BOSSES ARE KILLIN' EACH OTHER OFF-- THEY'RE WATCHIN' WHICH IS TH' BEST MAN FOR IT!
THAT SUPER JOB'S BEEN OPEN A YEAR NOW--I WONDER WHY THEY KEEP 'EM OPEN SO LONG--I WONDER AN' WONDER!
HOP
FFICE
4-19 J.R.WILLIAMS
THE COME-ON
COPR. 1946 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

Now...



Portable Bryant Thread Gages

Bryant Thread Gages have proved their superiority for bench work . . . now, the new *Portable* gage offers fast, accurate inspection of internal threads in large castings, work in the machine, etc., or in any parts where bench inspection may be inconvenient.

The Bryant Portable Thread Gage is so accurate that it can be used to check master gages, and on production work it will check threads *all* over in a few seconds. It is 4 to 5 times faster than plug gaging. Retracting gage segments *eliminate* threading the gage into and out of threaded holes — they prevent wear — on Class 4 and 5 fits, selective assembly is possible by classing threads according to indicator readings — pilots on back of thread segments mean rapid, catchless insertion and removal of the gage — there is no chance of cross threading.

The fastest, cheapest, most accurate method of inspecting threads is the Bryant method — it is the *only* method for *visually* indicating the size of internal threads. Write for complete details.

Perfect for inspecting threads on large pieces that cannot be moved conveniently to the inspection department.

Allows checking of threads in the work in the machine.

Eliminates threading of gage into and out of threaded holes.

Four or five times faster than plug gaging.

Gives overall inspection in a few seconds—at a glance.

Master gage accuracy transferred quickly to production parts.

BRYANT

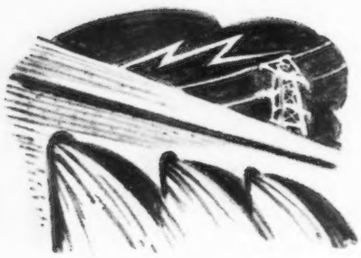
BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

West Coast . . .

ROBERT T. REINHARDT

• Wendell Berge's fears that Geneva's freight rates will stifle operation are not shared by many Westerners . . . New aircraft developed in Los Angeles as labor peace looms.



SAN FRANCISCO—From the snow capped peak of Mount Baker in Washington on the north, to the palm fringed lagoons of San Diego on the south, steel hungry West Coast manufacturers tried to interpret the charges of Wendell Berge, assistant U. S. Attorney General, to the effect that eastern steel interests will "use every means within their power" to keep the Geneva steel plant out of operation.

While there is no unanimity of thought among western industrialists as to just how Geneva can solve their steel supply problems, there is a strong feeling that someone should be given full opportunity to have a try at running the giant plant with at least an even break on all controllable economic factors—including freight rates.

Mr. Berge's statement before the Senate Interstate Commerce Committee, "What I have said demonstrates that the eastern steel manufacturers intend, if not stopped by the government, to maintain their position in the western market through control over rate structure," apparently failed to arouse anything like an overwhelming response locally. While it is generally conceded that profitable operation of Geneva will depend to a large extent on the freight rates for finished steel, several traffic men and businessmen ventured the opinion that the present published rate of $12 per ton was not out of line.

Independent steel buyers and traffic men further expressed considerable doubt that the railroads could be influenced by eastern steel producers to set high rates for Geneva's finished products, as Mr. Berge implied, and were of the opinion that the Interstate Commerce Commission could be relied upon to see to it that the rates were fair and competitive.

No one, of course, denies that the lowest possible freight rates from Geneva to the West Coast are desirable, but most industrialists are realists who insist that economic factors, competition and ICC supervision will provide fair freight rates for the operators of the plant.

The Industrial Dept. of the San Francisco Chamber of Commerce, long concerned with the future operation of Geneva as a possible source of steel for western industries, made a study of freight rates relating to the present situation. G. L. Fox, manager of the department, presented this analysis:

"It should be understood that it is not possible to make reductions in rates on steel from any of the producing points without causing similar adjustments from all competing points of production. For this reason, it is not practicable for railroads to do some of the things that have been suggested in connection with rates on steel from Geneva to the Pacific Coast, particularly until it is known what the competitive situation is going to be; which includes knowledge of rates to be charged by water from Atlantic to Pacific ports, and other factors.

"IT is not within the province of railroad companies to undertake to decide where steel plants are to be located, but it is entirely reasonable to assume that when this question has been decided, if there is anything wrong with rate adjustments, after all of the known factors are considered, railroads will be willing to confer with those concerned in an endeavor to establish a workable basis of rates. As matters now stand, rates from Geneva are properly related to those from other steel producing points.

"Distance from Geneva to San Francisco is 855 miles; present rate 60¢ per 100 lb. In eastern territory, where there is a very large movement of steel, and where the rate level is generally lower than in western territory due to much higher traffic density, rate on steel, for example, from Bethlehem to Chicago (795 miles) is 48¢ per 100 lb.

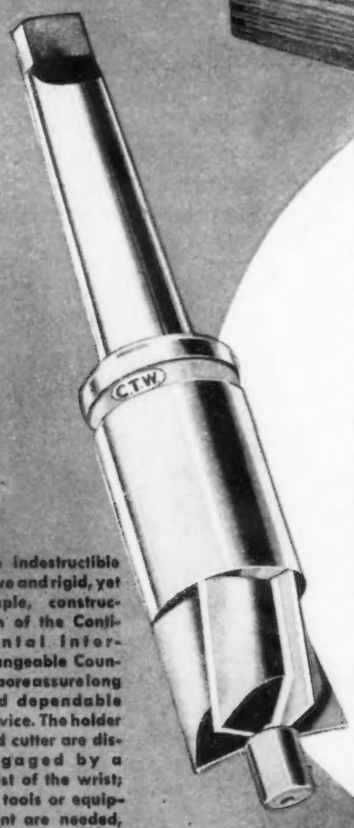
Shown in the table below are some examples of rates from various steel producing points for distances approximately the same as from Geneva to San Francisco.

"There is a rate of 55¢ per 100 lb from Minnequa, Colo., to Houston and other Texas ports (non-intermediate in application) which was authorized by the ICC several years ago at the time it permitted certain low rates to be published from Birmingham, St. Louis and

From	To	Miles	Rate
Chicago	Sidney, Neb.	893	83¢ per 100 lb
"	Garden City, Kan.	839	80¢ " " "
Birmingham	Giddings, Tex.	850	83¢ " " "
"	Olney, Tex.	851	84¢ " " "
Minnequa, Colo.	Navasota, Tex.	858	80¢ " " "
"	Little Rock, Ark.	865	90¢ " " "

Continental COUNTERBORE SETS

A Size For Every Purpose



The indestructible drive and rigid, yet simple, construction of the Continental Interchangeable Counterbore assure long and dependable service. The holder and cutter are disengaged by a twist of the wrist; no tools or equipment are needed, no matter how severe the operation has been.

Continental Interchangeable Counterbores are now available in a choice of three sets, each providing a wide variety of useful, dependable tools. In complete yet compact form, you will find a selection designed to fill the needs of the large or small toolroom. Set No. 1 (illustrated), for the small shop, includes cutters up to 1 1/16" diameter, with two holders. Set No. 2, also with two holders, has cutters up to 1 1/2" diameter. Set No. 3 provides cutters up to 2" diameter and has four holders. Whichever you choose, you will be sure to get fine, precision-made cutting tools.

CONTINENTAL TOOL WORKS

Division of Ex-Cell-O Corporation

DETROIT 6, MICHIGAN

CONTINENTAL TOOL WORKS
CTW
EX-CELL-O CORPORATION

Continental
CUTTING TOOLS

- Boring Bars and Tools
- Broaches
  Broach Pullers
  Broaching Fixtures
- Core Drills
- Counterbores and Countersinks
- CTW Drive Holders
- Counterbores (Tool Room Sets)
- Counterbore Pilots
- Inserted Blade Cutters
- Carbide Tipped Cutters
- Form Relieved Cutters
- Milling Cutters
- Thread Milling Cutters
- End Mills
- Side Mills
- High Speed Steel Reamers
- Carbide Tipped Reamers
- Shell Reamers
- Inverted Spotfacers
- High Speed Steel Tool Bits
- Carbide Tipped Tool Bits
- Circular Form Tools
- Cut-off Tools
- Flat Form Tools
- Dovetail Form Tools

46—43

Kansas City to meet competition of the water route from Birmingham to Texas ports.

"TO take care of government traffic, Section 22 quotation naming rate of 40¢ per 100 lb was quoted from Geneva to San Francisco, which has amply taken care of government shipments.

"It has been the policy of lines operating between Utah and California to encourage rates to develop maximum tonnage. Location of these lines makes it in their own interest to encourage development of industry in Utah to supply the Pacific Coast. It has long been the practice to maintain rates between San Francisco and Utah which would enable California producers to compete in Utah with Missouri River producers and which would enable Utah producers to compete at Pacific Coast cities with goods reaching there by water. For years when there was traffic in sight and a competitive marketing condition existed, railroads have maintained rates between San Francisco and Utah common points on the basis of 75 pct of Missouri River-Utah common point rates, which reflect approximately the same revenue per ton mile for the shorter haul between San Francisco and Utah common points, as from Missouri River cities to Utah common points.

"When there has been production in Utah of any commodity which could be marketed in Pacific Coast cities in competition with that reaching such communities by water, railroads have named low rates from Utah to the Pacific Coast, independent of all other rates, but reflecting an effort to afford transportation cost approximating lowest total cost from competing sources of supply, an example of which is the present rate on steel from Geneva to the Pacific Coast."

As May 1 approaches with no indications that another extension of time will be granted for the filing of bids on Geneva, there is considerable local speculation as to who is and who isn't entering the competition. The recent statement of the Washington office of the War Assets Administration that "some responses" have been submitted is construed by many industrialists here to mean that both U. S. Steel and Colorado Fuel & Iron Co. have placed bids, but the consensus is that the Henry J. Kaiser interests have not as yet done so. Mr. Kaiser, when asked at his Oakland office if he, or any of his companies, had entered a bid, stated, "No comment."

LOS ANGELES—Aircraft manufacturers continue to lead the industrial parade with new ships promising to maintain high production schedules.

Northrop Aircraft, Inc., is reported as coming out with a plane especially designed for photo reconnaissance. Known as the Reporter F-15, the ship is a two-place, twin-engine, mid-wing monoplane with twin booms connecting the tail surfaces to the engine nacelles. It is said to have a range of more than 4000 miles and top speed of more than 440 mph. There are provisions for mounting six cameras and alternate arrangements make possible the mounting of eleven different types of cameras. The manufacturers state that this plane was developed to do the job for which large converted bombers formerly were needed. Now getting into quantity production on a $7,500,000 Army contract, the company reports that the plane also has peacetime uses such as aerial mapping and geologic research.

Within a month or two Lockheed Aircraft Corp. is expected to unwrap its newest air giant. The double-deck Constitution is reported to be almost twice the size of this company's Constellation, which carries 44 passengers, and is expected to carry 90 to 100 passengers comfortably at a speed of 300 mph. With a gross weight of 90 tons, the new ship will be the heaviest in the air. The first ship is being made for the Naval Air-transport Service which plans to use it as a troop transport with a maximum capacity of 175 men. The ship will have four Pratt & Whitney engines developing between 12 000 and 14,000 hp. Wing span will be 200 ft and overall length 155 ft.

PAY raises have been announced for both Douglas Aircraft Co. and Consolidated Vultee Aircraft Corp. workers. Douglas and the International Assn. of Machinists agreed on an average wage increase of 20¢ an hr retroactive to Feb. 1, for most of the company's 10,000 employees at the Santa Monica plant. The boost is subject to Federal Government approval. Consolidated's 15 pct wage increase went to Downey and San Diego employees not represented by unions, and has been approved by the Federal Government. Settlement with the IAM union at the San Diego plant which has been struck since Feb. 3, is looked for this week. Agreement has been reached on a 15 pct wage boost but differences still prevail on wage reviews.

Tooling up for assembly of Kaiser automobiles at the Long Beach plant of the Kaiser-Frazer Corp. is reported underway. The Snyder Engineering Corp. of this city has been awarded a $500,000 negotiated contract for 15,000 lineal ft of conveyor system, according to Hal Babbitt, company spokesman. W. A. Smith Co., of Los Angeles, has been reported as having received the contract for 15,000 ft of railroad track and related work from the Union Pacific R. R. to the Kaiser-Frazer plant at a figure of $145,000.

SEATTLE—Puget Sound Navy Yard is reported as cutting down its civilian personnel from the present 17,900 to approximately 10,000 by September because of the reduction in Naval appropriation. At its peak of operations, this yard employed 32,000 persons.

The five ships now under construction in the yards will be scrapped, it is stated. The remaining civilian employees will do repair, overhaul and decommissioning work and take care of maintenance which was formerly done by service personnel. Rapid demobilization of navy reservists is reported as taking much of the yard's top help.

Employers in the metals trade are beginning to breathe a little easier now that a wage contract has been signed with blacksmiths in 25 shops. Contracts were effected between Blacksmith's Union, Local 106 and Washington Metal Trades, Inc., and independent employers. The average minimum wage increase was approximately 20¢ an hr. Some workers, however, will not receive raises as they have been working at rates above the minimum. Top scale for a journeyman blacksmith is $1.96 an hr.

MULTIPRESS

offers on-the-job proof of its low cost efficiency on scores of operations

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COMPACT
POWERFUL
VERSATILE
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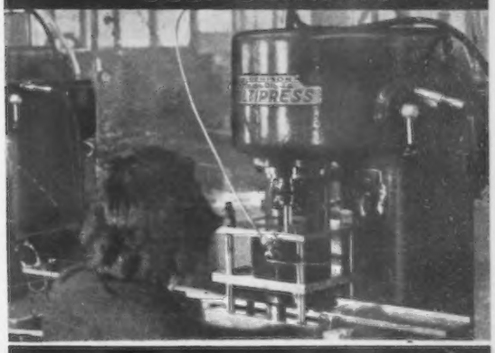

PUNCHING

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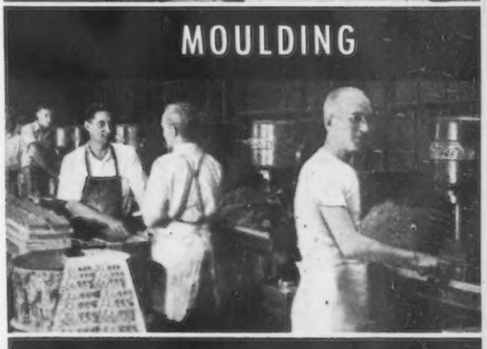
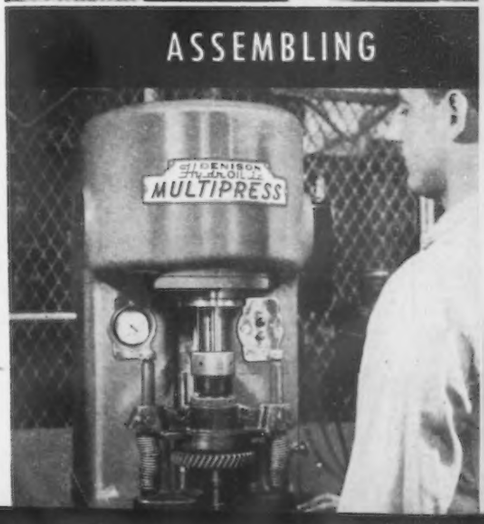


ASSEMBLING



European Letter . . . JACK R. HIGHT

• Horsetrading settling future of German metals industry in four power discussions . . . Lowest levels accomplish most constructive work.

BERLIN—The final announcement of the future of Germany by the Allied Control Council, with the level of the steel industry remaining at the 5.8-7.5 million ton figure as previously reported, makes such a poor prognosticator of me that I think I owe some explanation.

While the final discussions on the level of the German economy were still underway I called on one of the Americans who is cursed with the thankless task of sorting out the complicated structure of a quadripartite government, and setting down on paper a logical pattern for its operation. His explanation of how the Control authority works will throw some light on the complexities of the system.

In light of the decisions that were still being groped at by the four occupying powers we could talk only on highly theoretical terms, as it seems that almost every metal that I suggested for our example is still a source of irritation to one of the countries. We finally invented a new metal for the purposes of discussions which we chose to designate "xbalt."

My hypothetical interest in xbalt I outlined as follows: Assume that it was the basis of a highly developed industry before the war, was expanded during the war, and is essential to the peacetime economy of the country. Also assume that there is a wide degree of variance of opinion on the future of the industry among the four powers. The differences persist until the final decisions for the future of xbalt are made at the highest level.

Here is the tortuous route that the study and debate would take. Someone in the American staff of the military government office in Germany started the operation as far as the U. S. is concerned by making a staff study of the industry. This report may have been prepared as a separate unit, or in the case of some metals may have been a part of some longer report covering a number of metals. The report was prepared by one of the industry men who have been transplanted to Germany for the task, and then reported to the section chief.

The section chief has under his jurisdiction all metals, and so would consider the proposals for the future of "xbalt" in conjunction with the plans for all other metals. If the program fits in with the overall plan, he approves it, and it becomes the tentative American proposal.

Before the American plan goes into any quadripartite discussion the section chief will probably submit it for some informal discussion with his next superior to verify the stand that he is taking. For the purposes of making this treatise at all intelligible, we are going to assume at this point that we can get complete agreement among all branches of the American staff on the future of xbalt.

Such an assumption is a broad, optimistic step, of course. We have to remember that in addition to a tortuous vertical path that our plan must traverse through all the four power governmental levels, there are also a number of horizontal bypasses that may cause weeks of disagreement and delay. The plan for xbalt and other metallic industries is subject to the advice and possible modification of the Level of Industry Committee and the Committee for the Limitation of War Potential as well as several others. In one sense these efforts are duplicative, but their prime function is to make the overall evaluation, weaving the thread of our mythical metal into the pattern for all of the German economy.

On the occasion of the first four power meeting which is among the four chiefs of the respective metals sections, the haggling begins. As is usually the case in taking up the future productive level, it will probably develop that two of the powers take a comparatively harsh view of the future, and one may even want the whole xbalt industry virtually wiped out. Their estimates for a prewar industry of 15 million tons may be on the order of 1 to 2 million tons remaining, while the U. S. may be thinking in terms of a 4 million tons and the United Kingdom about 5 million. (This is the actual position on most metals, with Russia making the lowest suggestion, France slightly higher.)

Finding that immediate agreement on the xbalt question is impossible, the metals subcommittee appoints a working party to restudy the question. This working party is the lowest level of four power cooperation, and in most cases will be made up of one member from each of the countries, usually the same men who prepared the original studies.

Their meetings are highly informal, and probably produce the greatest amount of constructive work in the whole procedure. Members of the working party assemble with their statistical material at hand, and cover the problem in detail. Their first responsibility is to establish common terms of reference, and insure that everyone is talking about the same thing. Are we including only the primary metal production, or are we encompassing secondary xbalt also? Are we interested in ore production? What shall be the base year?

The next job for the working party is to determine just what the area of disagreement is, and where possible to state all agreement outside the area. The working party then prepares a brief (usually one page) report for the metals subcommittee, outlining the current situation. The metals subcommittee with this clarification may be able to solve additional parts of the conflict, or may see some new angle and send the report back to the working party for more study.

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particularly difficult set of problems (as did steel, and as are magnesium and aluminum) the metals subcommittee comes to the point where it can make no further progress, and so passes the brewing pot up to the Industry Committee. The outlines of the problem are sent to the higher level with a statement in effect, "How about this, we cannot get together."

The industry group has on its agenda many other problems in addition to our brainchild, and correspondingly less time to spend on it. The men who work at this level have a somewhat broader view, and are no longer specialists in xbalt or metals. They are briefed by their own representative on the metals subcommittee, and the same efforts at compromise are made by all parties.

The Industry Committee level is considered to be a crucial one since it is the last one where any degree of informality persists. The next step in the chain is one where the proceedings get stiff and progress tough. Continuing to assume that our project is as difficult as possible, the industry committee will finally arrive at a clear-cut disagreement. Probably by now 80 to 90 pct of the original factors involving the industry have been resolved, but the disagreement is still basic.

The Economic Directorate gets the next crack at the target, in a formal atmosphere, where the progress is slow, the first-hand knowledge of the subject is infrequent, and the high class horse-trading begins. We may discover here that the disagreement is one of principle, or more perhaps that two countries are anxious to establish a basic set of principles to cover this and similar situations, where the other two want only to talk applications. To make any progress during all these separate discussions, concessions are necessary. And they are made by all parties concerned.

By the time we get through the economic directorate level we may find that our figures for postwar production of "xbalt" that started with one country wiping the industry out, another suggesting 1-2 million tons, with the other suggestions at 4 and 5 million tons have gradually crept together. The figures have now resolved themselves into two instead of four, and after reaching 2.48 million tons and 3.6 million tons, the directorate level can do no more.

At this point the decision may be delayed by a request from one country for additional time to study the matter, or to report back to Paris or Washington for further instructions. Another frequently used stall is to ask that action on xbalt be delayed until a clear-cut decision on magnesium or some other material is reached.

The problem existing when the matter goes up to the next level is to advise the deputy military governors (Lt. Gen. Lucius Clay in the case of the U. S.) of the scope of the dispute, and the American position. In contrast with the directorates which meet about twice a week, this coordinating committee made up of the deputies meets only about five or six times a month.

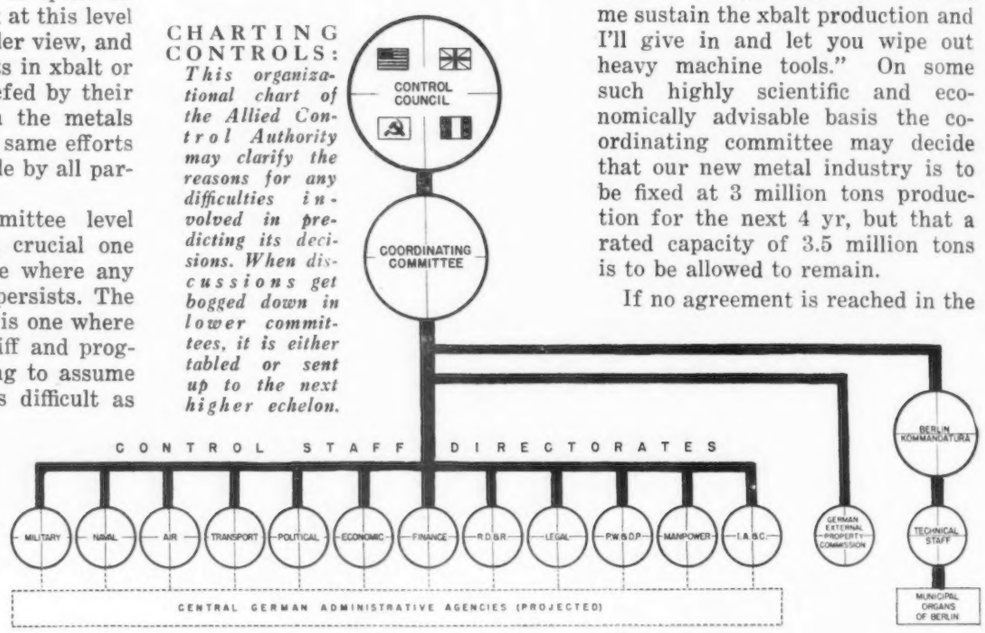
Sessions of the coordinating committee are highly formal affairs, at which one man only speaks for his country. The group has a prepared agenda, with briefs of each issue to be discussed. In addition, each of the representatives has been unilaterally briefed by his directorate representative in regard to the subjects under discussion. For the appearance of the now famous "xbalt" dispute (despite official secrecy on matters under discussion the story has doubtless leaked out by now as Berlin has more unemployed spies than the OSS) General Clay will be prepared with a copy of the official four power brief on the question, and a special statement prepared for his private use by the head of the economic directorate.

By the time the discussion gets to this level there is more purely mathematical compromise than there is altering of convictions. Agreements reached on this level take on the character of "You let me sustain the xbalt production and I'll give in and let you wipe out heavy machine tools." On some such highly scientific and economically advisable basis the coordinating committee may decide that our new metal industry is to be fixed at 3 million tons production for the next 4 yr, but that a rated capacity of 3.5 million tons is to be allowed to remain.

If no agreement is reached in the coordinating committee (CORC), the next step is into the top level of the Allied Control Authority, theoretically consisting of the Military Governors of the four zones of occupation. Actually the same men who sit on the coordinating committee often sit as alternates on the control council, as the commanding generals have additional responsibilities that take them out of contact with the workings of the control authority.

So far, resort of military governors reporting that no agreement can be reached has been used infrequently, and the major issue of the possible internationalization of the Ruhr as suggested by France is the most notable example. The effect of this discussion at diplomatic levels as to the future of the industrial area of Western Germany may be to negate the whole effort that has been made in Berlin to date in regard to the future of the metals industry.

CHARTING CONTROLS: *This organizational chart of the Allied Control Authority may clarify the reasons for any difficulties involved in predicting its decisions. When discussions get bogged down in lower committees, it is either tabled or sent up to the next higher echelon.*



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PERSONALS

° ° °

• **Capt. Nelson W. Pickering** has been named executive vice-president of Republic Industries, Inc., New York, control of which was recently acquired by the Barium Steel Corp. Until 1942 when Capt. Pickering was recalled to active duty in the Navy, he was president of the Farrel-Birmingham Co.

• **Charles E. Heintz,** who has been general sales manager of Elastic Stop Nut Corp. of America, Union, N. J., for the past 2 yr, has been elected vice-president in charge of ESNA's sales.

• **Raymond W. Kelly,** who has been traffic manager of the Ashland Div. of the American Rolling Mill Co., has been appointed assistant general traffic manager of the company, in Middletown, Ohio, and **Paul E. McGraw,** formerly chief rate clerk of the company's General Traffic Div., has been appointed Ashland's traffic manager to succeed Mr. Kelly. **Kasimir Oganowski** has been appointed to the position of associate director of research laboratories of American Rolling Mill. For the past 6 yr he has been Armco's supervising metallurgist.

• **George W. Frick** has been appointed executive vice-president of Carbide Die & Mold Co., Pittsburgh. Mr. Frick will also direct the company's sales. He recently resigned as general manager of sales of the Firth-Sterling Steel Co. to take over his new duties.

• **Nelson M. Hopkins,** who recently resigned as purchasing agent for machinery and equipment at the Curtiss-Wright plant, Buffalo, has become assistant sales manager for Kane & Roach Co., Syracuse, N. Y.

• **William Rosenthal,** formerly vice-president and director, Hyman-Michaels Co., has become associated with the Purdy Co. as vice-president, with offices in Chicago and St. Louis. He had been associated with Hyman-Michaels Co. for 41 yr.

• **C. S. Davis, Jr.,** formerly manager, has been appointed vice-president and general manager of Norge-Heat Div. of Borg-Warner Corp., Detroit. **J. W. Oswald,** sales engineer in the Automatic Transmission Div. of Detroit Gear Div., has been appointed sales manager of Norge-Heat.

• **W. Aubrey Thomas, Margaretta T. Clingan, Mary T. Waddell, Edward M. Thomas** and **John P. Hosack** have been elected directors of the Mahoning Valley Steel Co., Niles, Ohio. Officers elected were: **W. Aubrey Thomas,** president; **John P. Hosack,** vice-president and treasurer; **Robert W. Wilson,** secretary; **George L. Wick,** assistant treasurer; and **Paul O. Cline,** assistant secretary.

W. K. BREEZE, district sales manager, Jones & Laughlin Steel Corp.

• **W. K. Breeze** has been appointed district sales manager of the Jones & Laughlin Steel Corp. in Cincinnati. He has been associated with J & L since 1929 and since 1940 has been Pacific Coast manager. He succeeds **M. M. Harper** who has been appointed special sales representative in Cincinnati.

• **T. E. Moffitt** has been named sales manager of the Pennsylvania Salt Mfg. Co. of Washington, a subsidiary of the Pennsalt Co. which has its headquarters in Philadelphia. Mr. Moffitt's headquarters will be at Tacoma. Before joining Pennsalt, Mr. Moffitt was western sales manager for the Hooker Electrochemical Co. and was recently engaged in special sales development for the Weyerhaeuser Timber Co.

• **Alfred D. Nutter, Jr.** has been appointed purchasing agent for the Pittsburgh Plate Glass Co.'s Glass Div., Pittsburgh. For the past 5 yr, he has been assistant to the Glass Div. purchasing agent. He succeeds **Homer M. Hoffman** who has retired after more than 35 yr with the company's purchasing dept.

• **Daniel J. Killfoile** has joined the sales staff of Alloy Steel Products Co., Linden, N. J. He was a purchasing engineer for Chemical Construction Co. before entering military service.

• **Evans S. Schmeling** has been promoted from the Chicago sales office to the Wyandotte, Mich. office of Wyandotte Chemicals Corp. where he is assistant manager of the industrial dept.

• **Col. Malcolm C. Durbin,** formerly chief of the facilities and certification unit of the materials distribution section, Army Air Forces at Wright Field, has become associated with Chicago Metal Hose Corp. serving as staff project engineer.

• **E. H. H. Graf,** associated with the Oilgear Co. of Milwaukee as Detroit district manager for the past 13 yr, has been appointed sales manager of the U. S. Broach Co., Detroit.

• **Fred Lord,** director of procurement for the Kaiser Portland, Ore. shipyards during the war, has been named director of purchases for Kaiser-Frazer Corp. and Graham-Paige Motors Corp. He has assumed his duties at Willow Run, Mich., succeeding **J. D. Friend,** resigned. **Eugene L. Reason,** former assistant purchasing agent of Chrysler Corp., has been appointed consultant to the director of purchases, effective May 1.

• **Richard S. Sawyer** has been named assistant general manager of purchasing and traffic for Rheem Mfg. Co. and will make his headquarters in the New York office. He has been with the company since 1941.

• **Charles U. S. Grant** has been appointed sales engineer in the Cleveland office of Foote Bros. Gear & Machine Corp.

• **C. T. Spivey** has been appointed assistant director of industrial relations of Columbia Steel Co. with offices in San Francisco. Mr. Spivey, who has been associated with the U. S. Steel Corp. since 1937, has served in numerous capacities of industrial relations work for the steel corporation.

• **H. S. Dershimer** has been made assistant sales manager, mid-continent district for Pittsburgh Steel Co., Pittsburgh, with offices in Tulsa. Mr. Dershimer had been with National Tube Co., Guaranty Liquid Measure Co., and for the past 10 yr was district sales manager at Tulsa for Babcock & Wilcox Tube Co.

• **H. L. Crowder,** traffic manager of the Pennsylvania Salt Mfg. Co., Philadelphia, has retired after almost 30 yr service with the chemical company. **J. G. Robison,** assistant to Mr. Crowder for many years, has been appointed Pennsalt's new traffic manager. **William J. Robb** has been named assistant traffic manager.

• **Harry M. Clarke** has been appointed assistant to the president of Bliss & Laughlin, Inc., and will be located in the general offices at Harvey, Ill. Mr. Clarke has been associated with Bliss & Laughlin in a sales and metallurgical engineering capacity and prior to this was with Carnegie-Illinois Steel Corp. for a number of years.

• **Harley E. Huddle,** chief engineer, has been appointed secretary and sales manager of the Howard Engineering & Mfg. Co., Cincinnati.

• **C. A. Nagy,** formerly production manager of Transue & Williams Steel Forging Co., Alliance, Ohio, has joined C. A. Waite Co., Pittsburgh, as representative in Ohio. He will handle sale of warehouse steel.

• **F. J. Gaffney,** former head of the measurement and test equipment group of the MIT Radiation Laboratory, has been appointed chief engineer of the newly-organized Polytechnic Research & Development Co., Inc., Brooklyn.

• **R. S. Bennett** has been appointed chief engineer of Thos. Firth & John Brown, Ltd., Sheffield, England, following the resignation of **E. D. Bool.**

• **F. Worton** and **W. Denton** have been appointed works managers of Brown, Bayley's Steel Works, Ltd., Sheffield, England.

• **H. Jack,** chief electrical engineer, **A. A. Pollock,** chief mechanical engineer, and **L. J. Davies,** head of the research laboratory, have been elected directors of the British Thomson-Houston Co., Ltd., Rugby, England.

• **A. E. McRae Smith** is leaving the Mond Nickel Co., Ltd., to take charge of the foundry consulting activities of Keighley Laboratories Ltd., Keighley, England, as of May 1.

• **H. Mandel** has resigned as president of the Wickman Corp. to take over a special assignment for the parent company, A. C. Wickman, Ltd., of Coventry, England, with which he has been associated for the past 18 yr. **Axel C. Wickman,** who is chairman and managing director of the parent company, has been elected president of the corporation. **William T. Muirhead** has been elected executive vice-president and is charged with the full responsibility of the operations of the corporation. Mr. Muirhead has had 16 yr service with Wickman organizations and in 1940 established A. C. Wickman, Ltd., Toronto, of which he is managing director.

• **Robert N. Harwood** has resigned as assistant manager of the Cleveland plant of Edgar T. Ward's Sons Co. to join the Ohio Stainless & Commercial Steel Co., Cleveland, as general manager.

• **Gerald M. Smith** has been named personnel director of the Car Works Div., Pullman-Standard Car Mfg. Co. He has been associated with the company since 1937.

• **Douglas F. G. Eliot,** general purchasing agent in charge of purchasing and traffic for the Western Electric Co., New York, has been elected a vice-president of the company.

• **Robert S. Herwig** has joined the Bogue Electric Co., Paterson, N. J., and will head the company's expanded plating equipment dept. He was previously supervisor of chemical research, Eclipse Pioneer Div., Bendix Aviation Corp.

• **K. H. Woolson,** acting president of the Jones & Lamson Machine Co., Springfield, Vt., while **R. E. Flanders** was on leave to fill a government position, has been elected president. Mr. Flanders has been elected chairman of the board.

• **William I. Burt** has been appointed vice-president-manufacturing and **Dr. Frank K. Schoenfeld,** vice-president-technical, B. F. Goodrich Chemical Co., Cleveland.

• **G. M. Staples,** general manager of the Colorado Supply Div. of Colorado Fuel & Iron Corp., Denver, has been elected a vice-president of the parent firm.

• **Champ Carry** has been elected president of the Pullman-Standard Car Mfg. Co., Chicago, succeeding **C. A. Liddle,** who was elected chairman of the board. Mr. Carry, who has been executive vice-president of the Pullman Co. since 1941, resigned that office and a directorship to accept the presidency and a directorship of Pullman-Standard. He will continue to serve as a director of Pullman, Inc., the parent firm. Mr. Liddle has served as president of Pullman-Standard for 11 yr and previously was president of the Pullman Car & Mfg. Co.

• **Mrs. Florence L. Boutet** has been elected president of the Farnham Mfg. Co., Buffalo, succeeding her husband, the late Frank L. Boutet, who also was treasurer of the concern. **F. L. Boutet, Jr.** has been elected vice-president, **William E. Schupbach,** treasurer. **Edward L. Keenan,** former general counsel, becomes executive vice-president and general manager, and **Leo J. Burns,** secretary. **George J. Boutet** has been elected to the board of directors.

• **Turner A. Duncan,** formerly with the General Motors Truck & Coach Div., has joined ACF-Brill Motors Co., as assistant to Irving B. Babcock, chairman.

• **J. Tyson Stokes,** vice-president legal dept., has resigned from the Baldwin Locomotive Works, Philadelphia, to resume his partnership with the company's general counsel, Messrs. Morgan, Lewis & Bockius. **Robert F. Doolittle** has become associated with the company with the title of counsel. Prior to the war, he was with a New York law firm.

• **A. A. Moody** has retired as general manager of branches of Jarecki Mfg. Co., Erie, Pa., but is maintaining offices in St. Louis in a consulting capacity, and **W. Howard Pape** has been appointed manager of branches with headquarters in Houston.

• **R. W. Pflug** has been promoted to national accounts manager of Detrex Corp., Detroit. He was formerly central regional manager.

• **Robert G. Glover** has taken over the vice-presidency of Alberto Ubbelohde, Inc., New York. Mr. Glover has previously been connected with the State Dept. and Dept. of Commerce.

• **Archie J. Kashubeck** has been named district railway sales manager of the National Malleable & Steel Castings Co., Cleveland, with headquarters in San Francisco.

• **James R. Duffy** has been appointed to the public relations staff of Sylvania Electric Products, Inc., in New York. Serving as manager of employee activities in the company's industrial relations dept. during the war, Mr. Duffy was formerly assistant advertising manager of the Lighting Div.

• **William P. Loyzelle** has been appointed American Locomotive Co. traffic manager for all divisions except the Railway Steel Spring. His headquarters will be in Schenectady, N. Y.

• **Paul Warburg** and **Bernard Steiert** have been named representatives for Walsh Holyoke Boilers Works, Inc., of Holyoke, Mass., and Alloy Fabricators, of Perth Amboy, N. J., with headquarters in New York.

• **Robert C. Maentz,** who was formerly in charge of refractory sales in the Pittsburgh district of Permanente Products Co., has been named sales manager, Eastern Refractories Div., with headquarters in Akron, Ohio.

• **A. J. Williamson,** for 7 yr chief metallurgist, has been made plant manager at the Summerill Tubing Co., Bridgeport, Pa.

• **Frank M. Urban,** assistant merchandise manager, has been appointed merchandise manager of the Mechanical Goods Div. of U. S. Rubber Co., New York.

• **H. E. Kenitz** has been appointed manager of manufacturing, Edison General Electric (Hotpoint) Appliance Co., Chicago. He has been with the company since 1925 as superintendent in the company's several plants, and later, until the present, general superintendent.

• **Ben E. Stair** has been appointed to manage the new Milwaukee office of the Tubular Micrometer Co., St. James, Minn. Mr. Stair formerly was with the home office sales dept.

• **Robert L. Wolff** has been named chief radio and electronics engineer for the Centralab Div. of Globe-Union, Inc., Milwaukee, to succeed W. H. Rubernstein. He formerly was with Western Electric Co., Chicago, in engineering development design. **Roland R. Roup,** formerly with A. O. Smith Corp., Milwaukee, in vitreous enamel research, has been appointed chief ceramic engineer of Globe-Union to succeed G. Milton Ehlers.

• **Robert F. Couch,** having recently returned from the Army, has been made assistant to Trowbridge A. Warner, sales manager, Hendrick Mfg. Co., Carbondale, Pa.

• **Martin F. Jones** has joined the selling organization of R. L. Brown, district sales representative of William F. Jobbins, Inc., Aurora, Ill. His headquarters will be at the district sales office in Chicago.

• **Henry W. Dodge,** former vice-president and general sales manager of the Texas Co., has been elected chairman of the board of Air Products, Inc., New York.

• **William E. Mahin** has been appointed chairman of metals and minerals research, Armour Research Foundation of Illinois Institute of Technology, Chicago. For 10 yr Mr. Mahin was in charge of metallurgical engineering at the East Pittsburgh plant of Westinghouse Electric Corp., and for 7 yr he did alloy research and development work with the Vanadium Corp. of America at Bridgeville, Pa.

...OBITUARY...

• **Edward F. Ozab,** 51, assistant Latin American regional director, U. S. Steel Export Co., died suddenly of a heart attack at his home in New York on Apr. 9. He joined the Export Co. 35 yr ago and spent 21 yr in the company's Havana office of which he was the manager when he was recalled to New York to assume his present position.

• **Edward H. Maciejewski,** 38, finishing dept. foreman of the American Brass Co. in Buffalo, died Apr. 1. He had been with the company for 18 yr, also serving as paymaster and chief inspector.

• **Byron W. St. Clair,** 54, development engineer, president and treasurer of the Mico Instrument Co., Cambridge, Mass., and formerly director of the General Electric Co., Lynn, Mass., died Apr. 4.

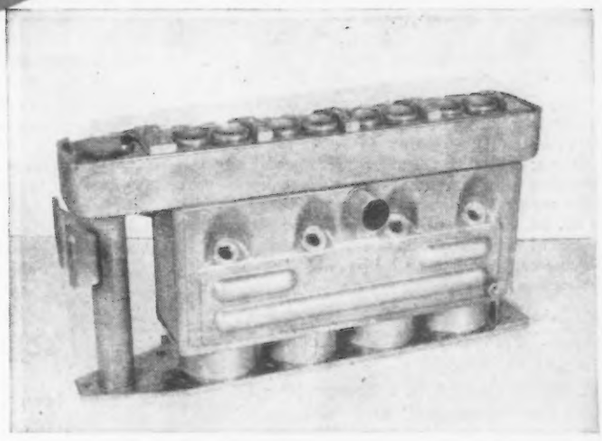
• **Terry E. Noell,** 40, assistant secretary and assistant treasurer of the Tennessee Coal, Iron & Railroad Co., Birmingham, died Apr. 4.

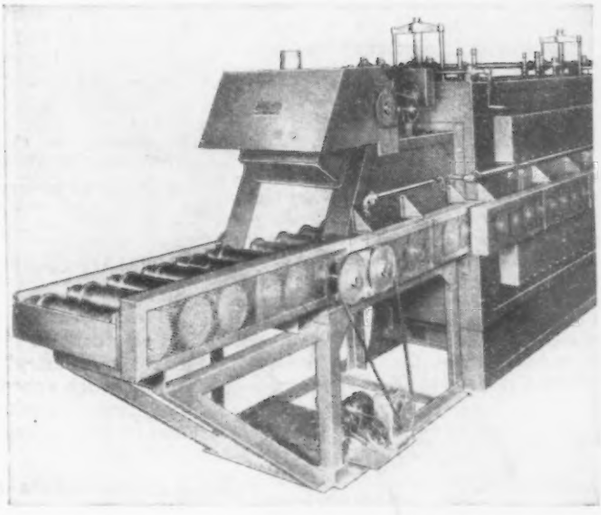
• **Herbert W. Gledhill,** 63, vice-president and general sales manager of the Shepard-Niles Crane & Hoist Corp., Montour Falls, N. Y., died recently.

• **Albert W. Balderson,** one of the original founders of the Beloit Foundry Co., Beloit, Wis., died at a hospital there after several months' illness.

• **Robert W. Henke,** 49, district manager of the Pratt & Whitney Co., Cincinnati, died recently as the result of a cerebral hemorrhage.

CROSLEY ENGINE BLOCKS BRAZED in LINDBERG FURNACE





Over 120 separate parts brazed into a single unit in 1 operation

The brazed, all sheet-steel engine block used in the new Crosley car is outstanding among recent engineering developments.

In a single brazing operation, light walled alloy steel tubes and deep drawn steel stampings—over 120 in all—are brazed together in a Lindberg Roller Hearth Brazing furnace to form the Crosley engine block weighing only 14.8 pounds.

Completed engine block assemblies—4 to a tray, are automatically charged into the continuous Roller Hearth Furnace. The work, which at all times is protected by the Lindberg Hyen atmosphere against scaling or decarburization, first enters a preheating zone—then the brazing chamber, where the actual brazing takes place at 2060° F. From the brazing chamber, the blocks go to a slow-cooling zone which reduces the temperature to about 1500° F.

In the next zone, cooled Hyen Hydryzing atmosphere is forced over and through the block by means of fans. This atmosphere quenches the cylinders and valve seats to obtain necessary hardness. Thus the furnace not only brazes but also hardens. The block is finally cooled to about 200° F. in the Hyen atmosphere to prevent scaling. This process of assembling and hardening an internal combustion engine was invented and is being patented by Powel Crosley Jr.—and the Lindberg Engineers worked out a particular furnace, which permits quantity production.

Perhaps too, some of the problems of producing your product can be more efficiently solved by employing brazing methods. Lindberg Engineers will be glad to discuss various possible applications of brazing to your line. Write today for Bulletin 210 and a reprint of an article describing how the Crosley automobile engine block is made. LINDBERG ENGINEERING COMPANY, 2452 W. Hubbard Street, Chicago 12, Illinois.

Lindberg

FURNACES

SUPER-CYCLONE • CYCLONE • HYDRYZING • BRAZING

Dear Editor:

MALLEABLE MAGNET ALLOY

Sir:

In the Feb. 7 issue, under "Newsfront," we noticed two items in which we are very much interested. It would be appreciated if you could tell us the source of these items . . . the items referred to were a malleable magnetic material having 75 to 80 pct the coercive force of Alnico . . . and the practicality of a self-lubricating stainless steel wire for recording . . .

R. FULTON
Indiana Steel Products Co.,
Valparaiso, Ind.

● (1) The manufacturer is not prepared as yet to release further data on this material, but we have forwarded your request to them; (2) these new developments in recording wire use are thoroughly covered in the report "Plastics in Germany, 1939-45," by G. M. Kline, and is available from the Office of the Publication Board, Dept. of Commerce, Washington. It is identified as publication OPB-8.—Ed.

ACETOGEN AND ACETYLENE

Sir:

I am interested in a comparison of the gases "acetogen" and "acetylene" for cutting and burning purposes. Can you refer me to a place where it might be obtained? I understand that acetogen is a comparatively new gas which is not as explosive as acetylene and which is easier to store.

C. C. McAFEE
229 Calhoun St.,
Charleston, S. C.

● Acetogen is a fuel gas used for cutting operations and is produced by White Industrial Chemical Co., Detroit. We do not know of any published data comparing the two gases. Data on acetylene are, of course, available in any good chemical or engineering handbook. Almost unlimited information on acetylene can be obtained from producers such as Linde Air Products, New York, Air Reduction Sales Co., New York, and National Cylinder Gas Co., Chicago.—Ed.

MEASURING TUBE

Sir:

Will you please send us a copy of article appearing on p. 52 of the Mar. 21 issue, entitled "Gas Pressure Measuring Tube."

WILLIAM A. FRANK
Frank Engineering Corp.,
Jersey City 6

● Tear sheets have been mailed.—Ed.

PRECISION CASTING

Sir:

We enclose herewith original bank draft for 60¢ for one copy of "Precision Casting—Lost Wax Process."

ROBERT MacFARLANE
Clyde Alloy Steel Co., Ltd.,
Motherwell, Scotland

GERMAN COIL SPRING

Sir:

In the Mar. 21 issue, in "Newsfront," is the following: "A new type of coil spring for engine valves was found by a U. S. investigator in a German technical steel institute . . . the Germans claimed that this spring, using 20 pct less material than a solid wire spring of the same rate, had a 20 pct greater fatigue life . . ." Have you anything on this which would lead us to authorities who could give us detailed information?

M. E. TOWNER
General Purchasing Agent
Western Maryland Railway Co.,
Baltimore

● This development is discussed in detail in report No. 937, "Survey of Automotive Targets in the 12th Army Group Area," available from the Dept. of Commerce, Washington, at a cost of $3 for a photostat and 50¢ for microfilm copy.—Ed.

BALE WIRE SOURCES

Sir:

We have been having difficulty in securing sources of supply on single loop end bale wires No. 11 gage, 10 ft 6 in. long, annealed. Can you furnish us with any names or addresses of concerns that we might contact to secure this kind of material?

H. W. HALL
Purchasing Dept.
Bigelow-Sanford Carpet Co., Inc.,
Thompsonville, Conn.

● A list of sources has been forwarded. —Ed.

GERMAN CARBIDE INDUSTRY

Sir:

Please send us one reprint of the article entitled "German Cemented Carbide Industry" by Gregory Comstock, which appeared in the Aug. 30, 1945 issue. Enclosed is 15¢ to cover cost of article.

A. RICH
Advertising Manager
J. K. Smit & Sons, Inc.,
New York 7

GEOGRAPHY PROBLEM

Sir:

I would appreciate very much if you could send me information on the topic "The Use of Metal in World War II." This subject has been assigned to me by my geography teacher.

EDWARD STRACHMAN
Waterbury, Conn.

● Edward, you caught us off base with that question. Couldn't you narrow the subject just a little? If we were to start telling you of the role metal played in the last war, we would all be doddering, bewhiskered old men before the tale had been fully told, for World War II was a war of metals and our superior handling of metals and our overwhelming supply of metals was the stuff of which victory was made. The American Iron & Steel Institute has several booklets, which they are forwarding to you, and will answer at least part of your question. These publications are "Steel's War Record," and "Time Table of the Steel Industry in the War." Couldn't you talk your teacher into a slightly simpler assignment?—Ed.

JOB EVALUATION

Sir:

We would like to obtain one copy of the three-part article "Common Sense in Job Evaluation" by David Anderson and Arthur H. Hansen, which appeared in the Jan. 10, 17 and 24 issues of THE IRON AGE.

E. S. HOOPES, JR.
General Superintendent
Steel & Tube Div.,
Timken Roller Bearing Co.,
Canton, Ohio

● We have a reprint entitled "Techniques and Time Study—Incentives and Job Analysis," which contains the three articles on "Common Sense in Job Evaluation," together with three other articles on Time Study by the same authors which appeared in THE IRON AGE. Cost of the reprint is 60¢. A copy has been forwarded.—Ed.

LONGEST STRIKE

Sir:

I have noticed in the "Assembly Line," p. 72, Mar. 21 issue, that you mention under the picture about the termination of the General Motors strike, the comment "the longest strike in industrial history." Strangely enough, the Detroit *Free Press* has carried an article to the effect that the Bohn Aluminum & Brass Corp. strike, which terminated that day was a 179-day strike, and thus was longer than the G-M strike. It isn't often that THE IRON AGE is wrong.

J. A. UPSTILL
7310 Woodward Ave.,
Detroit

● The somewhat macabre distinction of the "longest strike" is hereby passed over to the foremen's association of Bohn, in deference to the records of the U. S. Conciliation Service.—Ed.

FISHER FURNACE

Sir:

Could you give us the name and address of the manufacturers of the Fisher furnace for melting nonferrous metals?

D. A. EAGAN
Eagan & Smith Mfg. Co.,
Providence

● The Fisher Furnace Co., 5539 N. Wolcott Ave., Chicago 40, manufactures this furnace.—Ed.

"Reduced cleaning time approximately 50%."

"32 hours' cleaning time reduced to 7 hours."

"Time cut from 24 hours to 8 hours."

"5 hours' former cleaning time reduced to 15 minutes."

"We are cleaning castings in half the former time."

"60 man-hours of cleaning time reduced to 7 man-hours."

WHEELABRATORS *put a brake on* TIME

Every production operation represents a closely calculated measure of time. In metal cleaning, the time factor is usually responsible for high costs. As time is cut, costs are cut also.

The Airless Wheelabrator throws 300 lbs. of abrasive per minute in a controlled stream that completely scours heavy loads brilliantly clean in a few minutes. Compressed air, with its costly power and equipment requirements, is entirely eliminated. Cleaning time is drastically reduced, as shown by the statements of users above.

There are many other advantages of the Airless Wheelabrator method of cleaning. As all scale and sand are removed down to the virgin metal, machining and grinding are faster . . . tools last longer . . . inspection is simplified . . . hardness readings are accurate. Wheelabrated products are bright, silvery and uniformly clean. A Wheelabrated surface provides a perfect bond for final finishing. Chipped and rounded corners are eliminated.

Get the facts on how you can benefit from this modern cost-reducing, speed-cleaning process. Write today for Booklet No. 74 "The Airless Wheelabrator . . . What It Is and What It Will Do."

American FOUNDRY EQUIPMENT CO.

510 S. BYRKIT ST.
MISHAWAKA, IND.

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

This Industrial Week . . .

- ***Steel Ingot Rate Unchanged at 79 Pct***
- ***Long Coal Strike Means Drastic Drop***
- ***Steel Companies Realign Market Areas***

GAMBLING on the chance that the coal strike would be settled in time to prevent a drastic shutdown in the steel industry, many companies this week maintained a higher operating rate than had been expected. Another segment of the industry, however, was forced to curtail operations further. Diminishing supplies of coal and coke by this weekend will force the whole steel industry to scrutinize operating schedules on a day-to-day basis.

Steel ingot output this week remains unchanged at 79 pct of rated capacity. A continuation of the coal impasse which now seems likely will force steel operations lower next week. Up to this weekend more than 350,000 tons of steel have been lost to the reconversion program because of the coal strike. Hopes that 1946 would show the biggest peacetime production of steel have been dashed because of the tremendous losses due to the steel strike and the coal stoppage.

In marked contrast to the slowing down of steel production in this country, March output in Great Britain represented the highest ever attained in a peacetime period. Steel ingot output there in March amounted to 1,145,000 net tons.

SIGNIFICANT steel market changes were disclosed this week when it became apparent that active markets close to steel mills and the high cost of freight absorption are rapidly accomplishing what the Federal Trade Commission has unsuccessfully attempted to achieve for years by regulation. Many steel mills are rapidly withdrawing from distant territories.

Nearly every steelmaker is re-establishing the areas in which he can sell profitably and has started to cut off sales beyond his economic boundaries on certain products. Simultaneously, low profit items are being dropped altogether from schedules. The realignment has hit particuuarly hard the Chicago, Western and Pacific Coast territories on sheets, wire rods, wire and tubular products. Reflecting this situation, one large pipe manufacturer notified its customers this week that it would close its Chicago sales office and withdraw from business in that territory and adjacent western states.

Withdrawals from these various markets have left in their wake scores of customers without a source of steel. Local mills have been forced to turn a cold shoulder to pleas of steel users to be placed on schedules. These companies find their order books already loaded with deliveries scheduled far into the future. This tightening-up and revision of sales policies is a direct aftermath of the wage and price increase.

SHOULD freight increases now being sought by the railroads be granted, steel companies will be forced again to look over their freight absorption with the purpose of further eliminating unprofitable accounts.

The tightness in the supply of semifinished steel for nonintegrated steel mills has been running a close second to the contraction of steel markets by individual companies. The larger companies who manufacture semifinished steel products are being forced to use a greater proportion for their own finishing mills. Nonintegrated wire producers have been brought to a near standstill by the decision of the larger suppliers to use their entire wire rod facilities for their own needs.

Other changes dictated by steel companies decisions to revamp their sales policies involve such large consumers as the railroads. The latter have been cramped by the halting of manufacture of track bolts and spikes by several smaller manufacturers in recent years. They will be harder hit in attempting to buy fastenings by the withdrawal soon of two large steel companies from the manufacture of this product.

Aggregate steel order volume this past week remained heavy with deliveries extended far into this year. Tubular products of all types including pressure tubing, mechanical tubing and oil country goods are in extremely heavy demand with all firms having unusually heavy backlogs. Flat-rolled steel is currently tighter than at any time in years. Companies which have been affected by the coal strike are concentrating attention on the output of sheets and strip in an attempt to alleviate the critical supply outlook.

WITH steel demand far outrunning steel supplies, it may be necessary for the industry to rapidly complete plans to take care of many consumers who are unable to obtain steel. Unless action is taken soon which will result in easing some of the exceptionally tight spots, some sources believe that the Civilian Production Administration will be forced into the position of taking more drastic measures. The industry through its advisory committee working with the CPA has appointed a committee of experienced steel officials whose problem will be the breaking of the log jam in certain specific steel products.

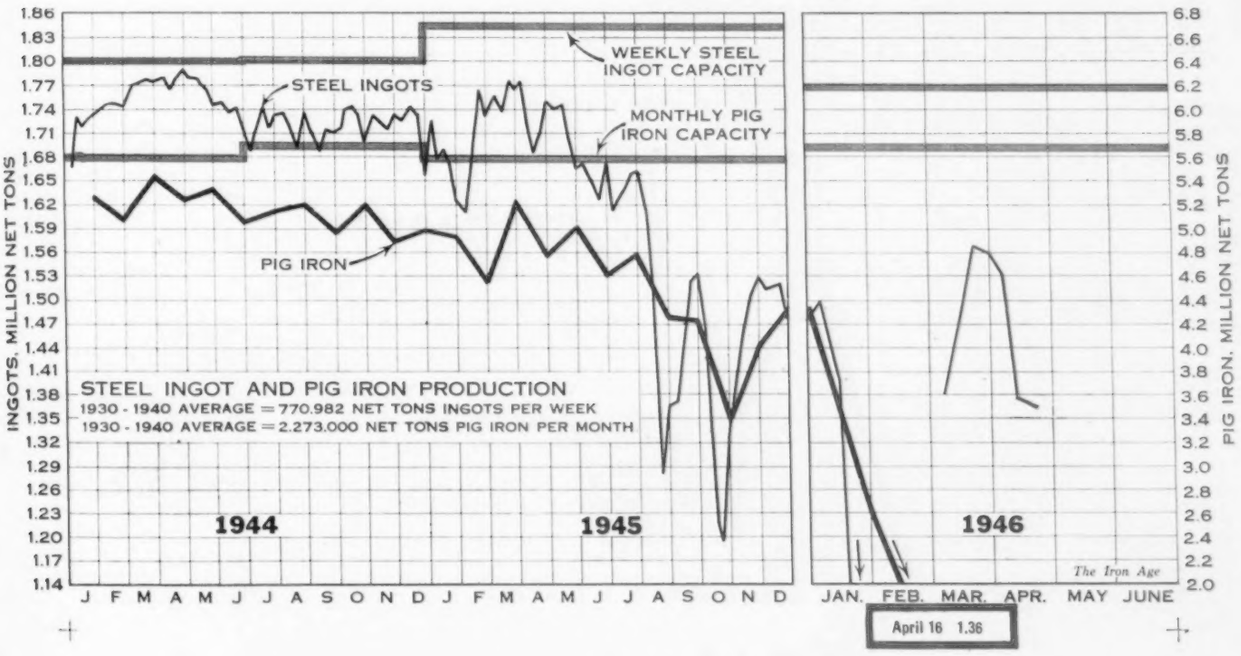
• **AMERICAN INGENUITY SCORES** — American ingenuity resulted in issuance of 27,124 patents to United States citizens last year with most of them going to residents of industrial states and relatively few being issued in the nonindustrial agricultural sections of the nation. The Patent Office report for 1945 showed New York in the lead with a total of 4882 patents granted its residents while South Dakota citizens obtained the fewest, only 12. On a per capita basis, statistic experts figured, Delaware displayed greatest creative ability with one patent to each 888 inhabitants as compared to the national average of one to each 5554. Residents of foreign countries obtained 2112 patents with the British leading with 905; the 243 issued to Germans are in the hands of the Alien Property Custodian.

• **RHEEM GOES TO MEXICO**—Formation of a Mexican affiliate, Rheem de Mexico, S. A., with Mexican associates holding 51 pct of the stock, has been announced by Rheem Mfg. Co. The Mexican firm will manufacture water and space heaters burning gasoline and butane, especially designed for the Mexican and South American market. It also will produce steel shipping containers for petroleum, paint, chemicals and edible oil products and butane containers. Production is scheduled for the third quarter of this year at a plant now under construction at Tlalnepantia near Mexico City.

• **RESINOUS SHEET PRICE CHANGE** — Bituminous and resinous coated steel sheets have been removed from under the General Maximum Price Regulations and placed under MPR 592, the regulation applicable to most building materials. Effective Apr. 16 the change of classification will have no effect on current prices but allows manufacturers to use the same pricing methods and adjustments applicable to most other building material items.

• **BARGE OPERATORS ATTACK RATES**—Barge operators on the Mississippi River and between Gulf ports are attacking a proportional rate which they claim favors movement by rail from New Orleans on barge shipments of iron and steel originating at Chicago, St. Louis and Kansas City. Briefs have been filed with the Interstate Commerce Commission under docket number 28731 by the Mississippi Valley Barge Line, Inland Waterways Corp., and the American Waterways Operators, protesting the rate structure and by railroads favoring it. Involved is imposition of an iron and steel article proportional rate from Chicago to New Orleans of 33¢ per 100 lb, provided movement beyond New Orleans is by rail. On traffic moving beyond New Orleans by water, a rate of 55c from Chicago to New Orleans must be applied, according to the barge lines. Similar rates apply from St. Louis and Kansas City. Objections to the rates are based on an asserted violation of section number 3 (4) of the Interstate Commerce Act.

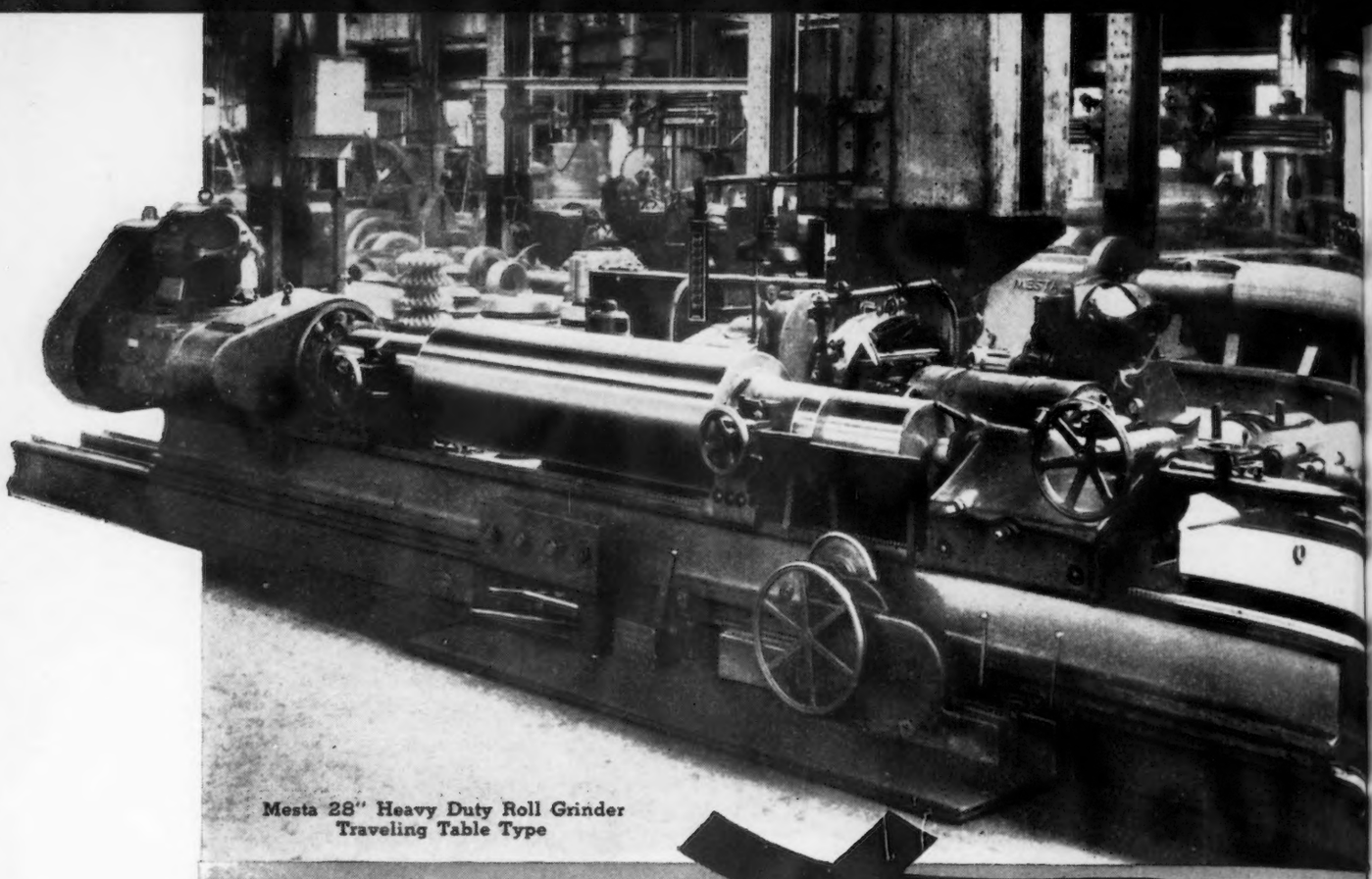
• **STEEL RATE HITS 6-YR LOW**—Production of steel ingots and steel for castings during the first quarter of 1946 was lower than in any three-month period since the second quarter of 1939, and was 10,000,000 tons below the first quarter in 1945, as a result of the steel strike, according to the American Iron & Steel Institute. Production for March of this year was 6,534,648 tons compared with 7,707,965 tons in March 1945. Production in February this year was 1,392,517 tons and for January, 3,872,054 tons, according to revised figures. First quarter production in 1946 was 11,799,219 tons compared with a 1945 output of 21,568,777 tons. Average weekly production during the first three months of this year was 917,513 tons. The weekly figure for the same period in 1945 was 1,677,199 tons. The industry operated at an average of 83.7 pct of capacity during March this year, compared with 95.0 pct in March 1945. The 1946 first quarter average was 52.1 pct, compared with 91.6 pct a year ago.


WEEKLY STEEL INGOT CAPACITY
STEEL INGOTS
MONTHLY PIG IRON CAPACITY
PIG IRON
STEEL INGOT AND PIG IRON PRODUCTION
1930 - 1940 AVERAGE = 770,982 NET TONS INGOTS PER WEEK
1930 - 1940 AVERAGE = 2,273,000 NET TONS PIG IRON PER MONTH
INGOTS, MILLION NET TONS
PIG IRON, MILLION NET TONS
1944
1945
1946
J F M A M J J A S O N D J F M A M J J A S O N D
JAN. FEB. MAR. APR. MAY JUNE
The Iron Age
April 16 1.36

Steel Ingot Production by Districts and Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
April 9	73.5	71.0	70.0	89.5	94.0	104.5	94.0	89.0*	96.0	59.0	92.0	72.0	97.0	79.0
April 16	72.0	76.0	71.0	89.5	94.0	104.5	95.0	87.0	98.0	59.0	92.0	72.0	97.0	79.0

* Revised



Mesta 28" Heavy Duty Roll Grinder
Traveling Table Type

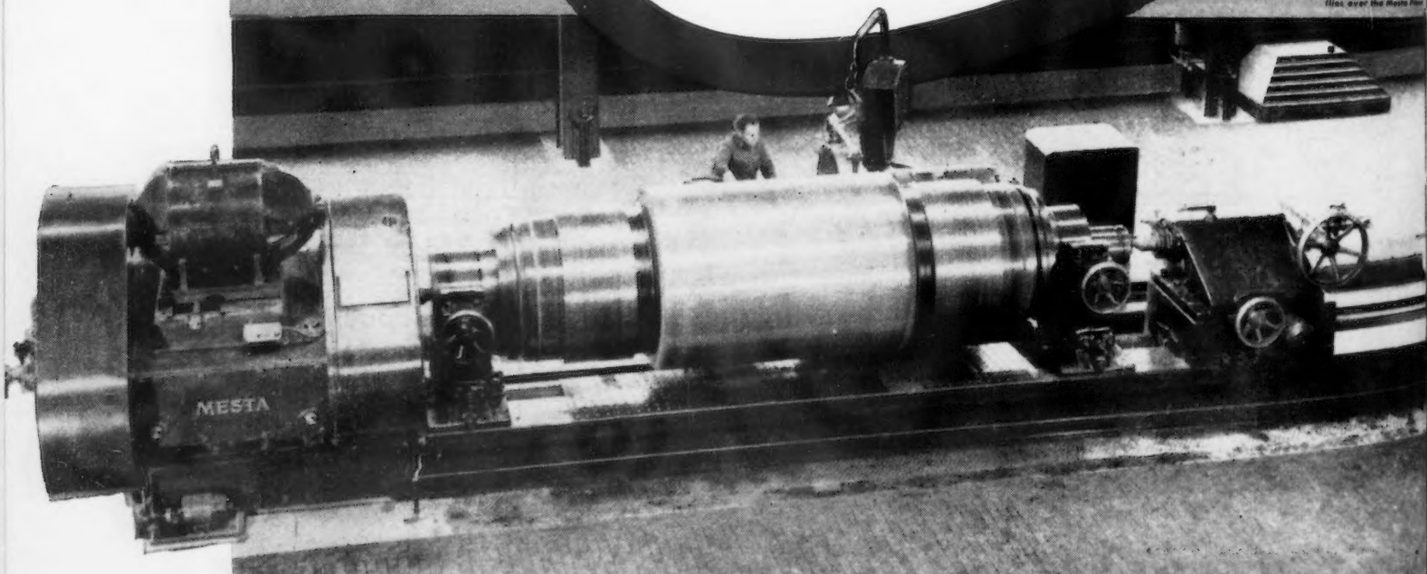
MESTA *Roll Grinders*

MESTA Roll Grinders of simplified design are the most accurate and dependable grinding machines available today. Built with precision for the finest finishing and with ruggedness for the heaviest roughing.

MESTA MACHINE CO.

PITTSBURGH, PA.

The Army-Navy 'E' flag with five stars flies over the Mesta flag



Mesta 60" Heavy Duty Roll Grinder
Traveling Wheel Head Type

Mills Abandon Remote Sales, Cut Unprofitable Items

Chicago

• • • **Customers in the Chicago** and far western areas who have been served by eastern mills are among the hardest hit in the nation by a general revision of mill policy aimed at confining sales close to point of production and eliminating large freight absorptions.

The harsh law of economics is acting to eliminate crosshauling, long an aim of the Federal Trade Commission through man-made regulation. The loser in both the short term and long run appears certain to be the customer who has enjoyed the oft-times cut-throat competition of invading mills with local producers.

A general withdrawal of eastern producers from this area, particularly in sheets, strip, wire and tubular items was culminated Monday by notification to customers of Spang-Chalfant that it would close its Chicago sales office. Consignment contract customers of Spang in Iowa, Nebraska, Wisconsin, Minnesota and Illinois as far south as Decatur, the territory formerly served by the Chicago office, have been eliminated and the company will in the future confine its sales to districts closer to Pittsburgh. Spang's sales in this territory have been close to 18,000 tons of tubular products annually.

In a letter to its customers, the company explained that recent Office of Price Administration price advances were insufficient to cover rising labor costs and still provide a profit on sales in areas in which large freight absorptions are required. Currently, the letter said, Spang is producing butt-weld pipe without profit and is selling lap-weld pipe at a loss. The company had no alternative but to eliminate sales in this area, it declared.

Customers who have lost their source of supply by the action, for the most part jobbers and supply houses, have little hope of finding space on the already overcrowded schedules of other mills.

Previously, Laclede Steel Co. had cut off pipe sales in the Chicago district, and, it is reported, Pittsburgh Tube Co. Fretz-Moon Tube Co., it is understood, is restricting production to small sizes with sales close to its plant at East Butler, Pa. Although this territory is not affected, Bethlehem Steel Co. is said to be studying the revision of areas in which it sells pipe. Jones & Laughlin has cut on small size seamless tubing.

The withdrawal of eastern sheet producers from the Chicago district has been steady and silent, but the reaction of customers who must trim their manufacturing schedules or close altogether in some cases has been highly vocal. Denials of a change in policy by most mill representatives have a strange echo in the pounding on local mill doors by scores of customers who say that eastern sources have foresaken them.

Among eastern mills who have sold sheets and strip here are Republic Steel Corp., Jones & Laughlin Steel Corp., Wheeling Steel Corp., Weirton Steel Co., Great Lakes Steel Corp., American Rolling Mill Co., Sharon Steel Corp. and Youngstown Sheet & Tube Co. Youngstown acknowledges that it has pulled in its lines on cold rolled sheets produced principally at its Campbell, Ohio plant but by virtue of capacity at East Chicago, Ind., is a strong local supplier on other light gage flat rolled items. Jones & Laughlin, whose local sheet sales were never large here, has withdrawn on all sheet items.

Weirton acknowledges unavailability of electrolytic zinc-coated strip through use of capacity for tin plate, and Sharon is candid on a policy of greater customer and product selectivity. Allegheny-Ludlum Steel Corp. is reported out of the market here on high-carbon, cold rolled strip. Somewhere among other members of the group, Chicago is losing out on tonnage but none will admit it.

Non-interrogated wire-drawers are in many cases on the brink of closing. Rod requirements of wire plants operated by Bethlehem Steel Co. and American Steel & Wire Co. leave little, if any, for the local trade. On wire, itself, high carbon wire is offered on a

THE LITTLE ENGINE THAT COULD: *The smallest public railway in the world, the Romney, Hythe and Dymchurch, requisitioned by the British War Office Dept. during the war, reopens for public traffic. During the war the midget railway performed a giant's task, carrying freight which included miles and miles of Pluto, the petrol pipeline that spanned the Channel.*

reduced scale by nearly all producers.

Laclede, Sheffield, Wickwire-Spencer Steel Co. and Pittsburgh Steel Co. all apparently are making only selective offerings of wire products here. Wheeling Steel and Jones & Laughlin are reported in the trade to have reduced sales or to have withdrawn completely on wire rods in New England.

Two mills are reported to have licked the freight absorption problem by agreeing to keep local customers on the schedule if they will appoint a trucking company in the Pittsburgh district as agent to receive deliveries. Then the customer pays the haulage to Chicago.

The railroads, who have been able to get some rails, are faced with increased difficulty in securing fastening, with Inland Steel Co. scheduled to follow Carnegie-Illinois Steel Corp. out of the market on track spikes and bolts soon.

Local mills are turning the tables by pulling out of Central and Eastern Ohio, and a corresponding readjustment is taking place all over the country. Probably Henry Kaiser is wearing the industry's biggest grin because of the virtual stampede of Pennsylvania and Ohio producers from the West Coast leaving an almost assured market as soon as production facilities are completed at Fontana.

Railroads Ask Increased Freight Rates

Washington

• • • **Maximum increase** of 80¢ a ton on general iron and steel products, pig iron and iron and steel scrap, 12¢ a ton on iron ore and 15¢ to 40¢ a ton on bituminous coal and coke were asked by the railroads in petition filed with the Interstate Commerce Commission on April 15.

The increases sought on iron and steel, pig iron, scrap and ore are to be on either a net or gross ton basis as rated, while on coal and coke they would be on a net ton basis. Where the increases on pig iron, steel and scrap would be less than 80¢, a rate boost of 25 pct was asked.

The RR carriers requested an overall freight rate increase of 25 pct with certain exceptions to become effective May 15, adjustments to be made later if the Commission found them to be necessary. They declared that a general and immediate increase in freight rates is imperative to meet a critical situation resulting from the combination of increased wages of railroad employees, increased and increasing prices for materials and supplies and a severe decline in traffic and with freight rates at prewar levels and passenger revenues only slightly higher than before the war.

Specific advances asked in addition to the maximum 80¢ a ton on steel, sixth class, not otherwise specified were:

Rails, fastenings, frogs and switches, 25 pct, maximum 80¢ a ton, net or gross, as rated.

Cast iron pipe and fittings, 25 pct, maximum 4¢ a 100 lb.

Iron and steel pipe and fittings, not otherwise specified; nails and wire, not woven, and iron and steel rated fifth class, not otherwise specified, 25 pct, maximum 4¢ a 100 lb.

Railroad car wheels, axles and trucks: When included in iron and steel lists, 25 pct, maximum 4¢ a 100 lb:Other than when included in iron and steel lists, 25 pct.

Scrap, when other than commodity rates, 25 pct.

The minimum increase of 15¢ a net ton on coke is asked where rates now are 75¢ and less; on rate 76¢ to and including $1, an increase of 20¢ per ton is asked; on rates $1.01 to and including $1.50, an increase of 30¢ is asked and on rates over $1.50 an increase of 40¢ is sought.

On roasted dolomite an increase of 50¢ a ton was asked.

An increase of 25 pct was sought in rates on less-than-carloads and "any-quantity" traffic. Where rates are made by combining separately stated rates, it is proposed that each factor of such combination shall be increased separately. It is proposed also that joint international rates, to and from Canada or Mexico, shall be increased to the same extent and in the same manner as is proposed within the United States.

o o o

ROYAL LAUNCHING: H.M.S. Eagle, *first of the largest aircraft carriers Britain has built, goes down the slipway after being launched by Princess Elizabeth. The carrier was constructed at Harland & Wolff's shipyard in Belfast.*

o o o

Specter of Nationalizing Steel Industry Stirs Speculative Talk

London

• • • **Leading story** in most of the British press is the ultimate fate of the steel industry, with the current "out of the horse's mouth" version being that the close connection between the steel and the coal industry will make steel the next item on the nationalization list. If true, this change in the schedule of nationalization would probably see steel producers bought out by the government before the end of 1946.

By this time, however, there has been so much loose talk about the possibility and the timing of nationalization that no one believes anything that is being said. It seems agreed now that the current flood of stories that have been in almost every edition of every paper for the past three weeks was engendered by statements from Labor Party junior members. They sometimes have the uncanny habit of spilling the beans, and on other occasions have shown themselves to be irrepressible Zionchecks.

Ed. Note: Announcement of steel industry nationalization was to have been made in London early this week.

Having watched the London Times, Financial Times, Manchester Guardian, Daily Telegraph and several others chew over the possible systems, there seems to be very little left to be said over here until some official statement is made. The classic theories at the moment offer three possibilities:

(1) Complete nationalization, with the government buying the shares, and setting up a board to head the new business.

(2) Control of the plan by a government board, with the shares to remain in the hands of private capital.

(3) Retention of the present system, using the British Iron & Steel Federation plan for modernization.

The "usually reliable sources" have predicted each of the three at different times, and there seems to be no general predominance of feeling at the moment.

The official position in regard to the latest rumor tying the steel industry to the coal industry and jumping it ahead in the nationalization schedule is refuted in industry quarters with the statement that all issues interlocking the two industries have been resolved.

The decisions announced indicate that basically they have been, with the policy established of nationalizing the mines that belong to the steel mills, but not the coke ovens. On the other hand, the coke ovens that do not belong to steel industries are to be nationalized.

The only fresh thought on the subject is contributed by the London Economist, which points out the striking weakness of the Federation position in regard to the modernization program. Regardless of how well developed it may be, and how complete it is, it suffers greatly because it is the *Federation plan.*

The suggestion of the Economist is that it should have been examined critically by a group of experts outside the Federation. Since the Federation is the British steel industry, that would probably mean someone from outside the country, but it would be basic that someone with the technological experience to judge its worth yet not directly involved should make an impartial examination.

Not only the design, but the location of the new units would be subject to scrutiny. The Economist calls particular attention to the decisions in regard to scrapping certain production units.

Pittsburgh Traffic Club Plans Dinner

Pittsburgh

• • • **C. F. McBride,** president of The Traffic Club of Pittsburgh, and general traffic manager of the Pittsburgh Steel Co., announced that the annual dinner of the club will be held in the William Penn Hotel, on Apr. 30, 1946.

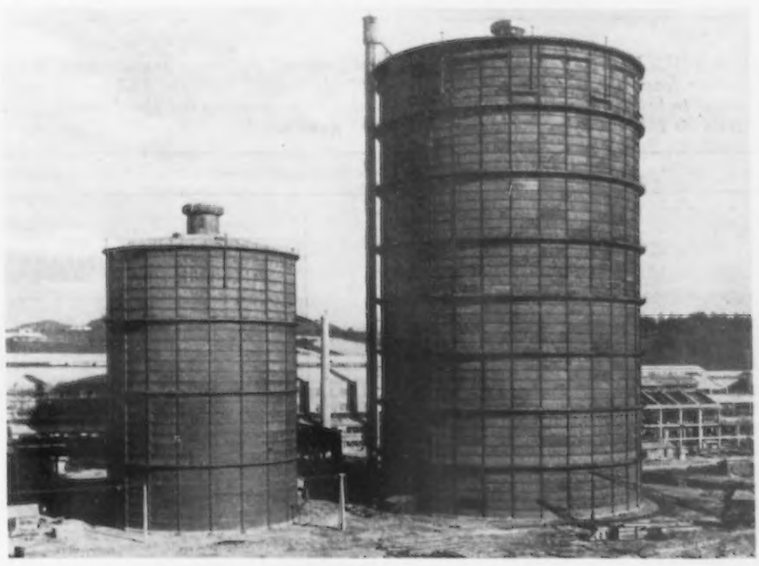
Gustav Metzman, president of the New York Central System, will be the speaker.

Institute Elects Directors

New York

• • • **The board** of directors of the American Iron & Steel Institute, New York, has elected three new directors to fill existing vacancies. They are: William M. Akin, president, Laclede Steel Co., St. Louis; Carl I. Collins, president, Superior Steel Corp., Pittsburgh, and Henry H. Timken, Jr., chairman, Timken Roller Bearing Co., Canton, Ohio.

THE BIG AND LITTLE OF IT: *First all-welded gas holders built in South America, erected at Volta Redonda Brazil for Brazilian National Steel Co. Holder at left has* 1,000,000 *cu ft capacity used for "bubble" on the line. Holder at right has* 5,000,000 *cu ft capacity, used for storage of blast furnace gas. Stacey Bros. Gas Construction Co., Cincinnati, was the contractor.*



Steel Labor Trouble Brewing in Canada

Ottawa

• • • **Labor troubles** which may affect practically all steel workers in Canada are now reaching a serious stage. To gain support of members of Parliament, union leaders have been presenting their case to individual members during the past week or ten days.

Union representatives of 60,000 Canadian steel workers claim that most members they have interviewed favor their new demands. They ask a weekly minimum rate of $33.60 per week compared with $30.96 now paid at Hamilton and the Algoma Steel plant in Sault Ste. Marie and with $28.56 at Sydney, N. S.

In addition they seek a 40-hr week with no reduction in take-home pay, two weeks vacation with pay, abolition of income tax for married steel workers earning less than $2000 a year, and establishment of a tripartite council or committee to be composed of representatives of the union, the companies and the government. They propose this council deal with all production, wage and working conditions problems.

The union has supplied each MP with a questionnaire. To make the results known, they say they will insert advertisements in daily papers across Canada giving the reply of each member. Instead of taking their case to the War Labor Board, the steel workers plan to go direct to the government to demand implementation of their program.

The union representatives claim that 70 pct of the English speaking Liberals and virtually all CCF and Social Credit members have signified support of their program. They also proclaim that Progressive Conservatives so far canvassed have indicated no intention to oppose the demands if the government decides to grant them. The union group says it did not get much support from French-speaking Quebec MP's.

* * *

The National War Labor Board has reserved decision on an appeal by the United Steelworkers of America (CIO) against a Nova Scotia War Labor Board decision refusing an increase of 4¢ an hr to workers at the Dominion Steel & Coal Corp. steel plant in Sydney. The union asked establishment of a base rate of 64½¢ an hr at the Sydney plant and based its case largely on comparisons with rates paid at the Algoma Steel Corp., Sault Ste. Marie and the Steel Co. of Canada, Hamilton.

Canada's Steel Rate Up

Toronto

• • • **Canadian production** of steel ingots and castings during February totaled 233,893 net tons for an average daily rate of 84 pct against 244,623 tons in January when the daily rate was 79.4 pct of total rated capacity and compares with 250,464 tons in February last year. Output in the month under review included 226,273 tons of ingots and 7620 tons of castings.

Charges to steel furnaces in February included 119,773 tons of pig iron against 122,526 tons in January; 64,855 tons of scrap of consumers' own make against 73,237 tons in January, and 71,412 tons of purchased scrap against 72,659 in January.

For the first two months of this year output of steel ingots and castings totaled 478,516 net tons compared with 519,186 tons in the corresponding period of 1945 and 472,038 tons in 1944.

Asks That Steel Plate Standards Be Retained

Washington

• • • **A voluntary Simplified** Practice Recommendation covering thicknesses of carbon steel plates has just been submitted to producers, distributors and users by the National Bureau of Standards.

The recommendation provides that thickness of carbon steel plates may be specified in measurement by inches or by weight per square foot. If inches are specified, the thickness will range from 3/16 in. to 2 in., inclusive. Where weight is used the range will be from 7.65 lb per sq ft to 81.60 lb. Plates over 2 in. and up to 6 in. thick progress in increments of ⅛ in. Those over 6 in. thick advance in quarter inches.

STRIKE BOUND: *Blast furnace output in January and February was drastically affected by the steel strike. In January total production from blast furnaces amounted only to 2,644,552 tons for 46.2 pct of capacity. The American Iron & Steel Institute was forced to bring out reports at a later date and as a consequence the January figures may be obtained by subtracting the February totals on this chart from the "year to date" figures.*

Blast Furnace Capacity and Production—Net Tons—Source: American Iron & Steel Institute

	Number of Companies	Annual Blast Furnace Capacity	PRODUCTION							
			PIG IRON		FERRO-MANGANESE AND SPIEGEL		TOTAL			
									Pct of Capacity	
			February	Year to Date	February	Year to Date	February	Year to Date	February	Year to Date
DISTRIBUTION BY DISTRICTS:										
Eastern	12	12,988,970	164,952	600,677	2,800	13,735	167,752	614,412	16.8	29.3
Pittsburgh-Youngstown	15	25,939,940	406,688	1,411,791	.....	4,271	406,688	1,416,062	20.4	33.8
Cleveland-Detroit	7	6,557,500	130,460	423,318	.....	.....	130,460	423,318	25.9	35.9
Chicago	7	14,093,510	280,144	868,783	.....	.....	280,144	868,783	25.9	38.1
Southern	9	4,924,670	119,451	338,120	2,706	7,079	122,157	345,199	32.3	43.4
Western	5	2,836,000	40,363	124,342	.....	.....	40,363	124,342	18.6	27.1
TOTAL	36	67,340,590	1,142,058	3,767,031	5,506	25,085	1,147,564	3,792,116	22.2	34.8

Harvester Suspends Construction Work On Large Tractor Plant

Chicago

• • • **Although preparatory** work has been completed, International Harvester Co. has suspended work on construction of a large new tractor plant at Wood River, Ill. Meanwhile, Caterpillar Tractor Co. has announced an expansion program which will enlarge the floor area of its Peoria, Ill., plant by nearly 50 pct and is pushing construction on a 925,000 sq ft diesel engine plant.

Discouraged by cost prospects and labor and material shortages on its construction program, Harvester is dickering for purchase and operation of the former Curtiss-Wright aviation plant at Louisville, Ky. The Louisville plant would replace the Wood River project in manufacturing plans for the "Cub," smallest tractor the company has designed, an improved model A tractor, and a new larger tractor. The Louisville plant would be the third large surplus war plant acquired by Harvester, the company already having bought the former Buick aircraft engine plant at Melrose Park, Ill., near Chicago, a smaller Chicago plant and the former Republic aviation plant at Evansville, Ind.

Harvester's difficulties at Wood River and in its other postwar construction projects, according to the company, have included getting work finished on schedule, establishing cost, assembling sufficient materials and recruiting labor. An estimated completion date of late 1948 at Wood River would postpone production of the new tractors until that time. If the Louisville negotiations are unsuccessful, the company may go ahead on the Wood River project anyhow, for investments in the site and its development already total more than one million dollars.

Caterpillar's long-range program will add 1,800,000 sq ft of floor space by the summer of 1948, construction controls allowing. With construction already under way, the diesel engine plant is not affected by the construction limitation order.

Other elements in the construction program include a building of 400,000 sq ft for expansion of present tractor manufacturing facilities; a 150,000 sq ft area addition to the parts department building; two buildings totaling nearly 90,000 sq ft of floor space for additional heat treating facilities, new metallurgical laboratory, and storage fixtures; and a centrally located building containing 200,000 sq ft of floor area to house activities related to plant maintenance and provide adequate quarters for sales, advertising and service departments.

POWER FOR TOMORROW'S TRACTORS: *Construction already is underway on Caterpillar Tractor Co.'s new 925,000 sq ft diesel engine plant, shown here as it will appear in relation to the company's present manufacturing buildings at Peoria, Ill.*

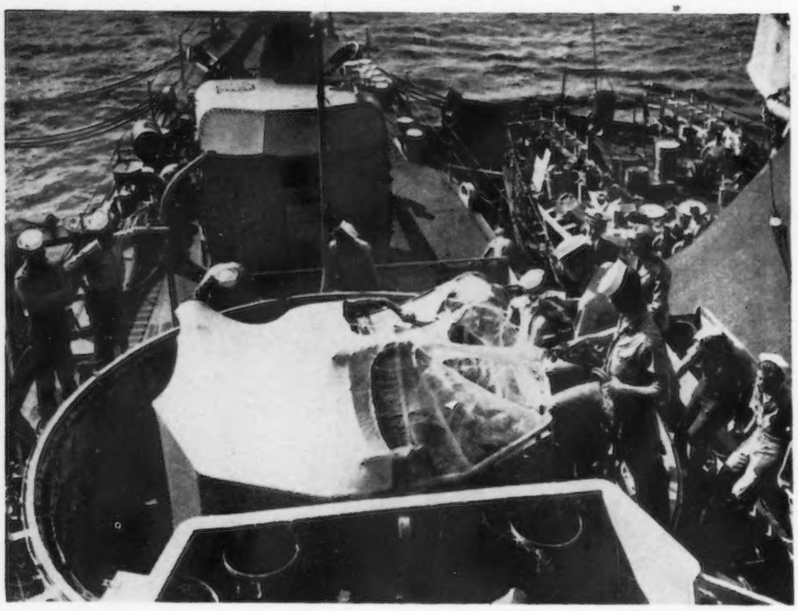
OPA Advances Price Of Refractory Brick

Washington

• • • **Pointing out** that it had taken the action to cover increases in production costs resulting from government approved wage increases, OPA has announced an increase of 11 pct in the ceiling prices for silica refractory and fireclay brick when produced in the area east of the Mississippi River and in the State of Missouri. Resellers were permitted to pass through the increase in plant ceilings. However, resellers under area dollar-and-cent pricing orders, OPA said, may not increase their maximum prices automatically but may apply to their area OPA office for reconsideration of their ability to absorb the additional cost.

The increase was the second within a year. A 6 pct increase was permitted by OPA order on June 23, 1945, as the minimum required by law to make prices generally fair and equitable and to restore earnings on these commodities to their average 1936-1939 level.

The price increase affects the manufacturers' f.o.b. plant or delivered prices rounded off to the nearest 5¢. The industrial users of refractory brick, such as steel mills and chemical manufacturers who use it in lining and relining high-temperature furnaces, will pay for the increases in price.



SHIP IN MOTH BALLS: *After decommissioning, the Navy sprays a plastic film on equipment, such as gun mount shown here, to prevent rusting while the ship is idle. Used on this 40 mm gun, this process is known as "packaging" the mount.*

The Navy Develops

Philadelphia

• • • **The Navy has gone** to war against the ravages of rust and corrosion on some 2700 combatant and non-combatant vessels now being inactivated or decommissioned at 15 berthing areas for which $70 million has already been appropriated. By the use of special protective paints, plastic moisture barriers and dehumidification equipment, the Navy plans to preserve in a state of readiness for emergency use a fleet costing billions and requiring many years to construct.

The developments of the Navy and cooperating manufacturers after years of investigation and experimental work may be found applicable to other fields where corrosion of production equipment is a factor or where it may be desirable to inactivate such facilities for subsequent use.

Perhaps the most significant development to come out of the Navy program is the new equipment designed for dynamic dehumidification of zones of the vessel that have been sealed off. This equipment employs solid desiccants such as silica gel or activated alumina for adsorption of the moisture in the air. Due to extreme porosity, these desiccants provide an enormous surface area which serves to hold vapors or moisture by surface or capillary adsorption. One cubic inch of silica gel has been estimated to have a surface area of 50,000 sq ft. These materials permit the release of adsorbed moisture upon the application of heat and are thus placed in condition for re-use.

In general, a desiccant bed is placed in a closed container and the moisture-laden air is passed through it, releasing its moisture in the process. When the adsorptive capacity of the desiccant is spent, the cycle is reversed and the reactivation process begins.

There are a number of producers of the dehumidification equipment employed by the Navy and experimental work is continuing, so that modifications of equipment are constantly under test. The equipment is made by the C. M. Kemp Mfg. Co., Baltimore 2; by Cargocaire Engineering Corp., Seattle and New York; Pittsburgh Lectrodryer Corp., Pittsburgh 30; and by the Davison Chemical Corp., Baltimore 3, the latter no longer producing dehumidifying equipment but serving in the capacity of a consultant to the Navy program.

Controlling and recording equipment for dehumidification has been developed by the Friez Instrument Div. of The Bendix Aviation Corp., Baltimore 4. This equipment comprises eight identical measuring units and a central recording and controlling station. The latter records temperature, humidity and time on adding machine tape as well as the code number of the particular measuring station where the reading was made. The equipment starts and stops the dehumidifying machinery based on an average of the individual measuring unit readings. As each station reports the local humidity the readings are added at the central station and, after all stations have reported, the total is averaged. If the result is above a selected value, such as the 30 pct designated by the Navy as the optimum humidity for preventing corrosion, the dehumidification machinery is energized.

The same type of dehumidification and controlling installation can be used for protecting perishable cargoes in merchant ships, and warehoused materials of all kinds can be assured against spoilage by this equipment.

In conjunction with the dynamic dehumidification equipment, the Navy has also worked out a program for sealing-off and dehumidification of topside equipment such as gun mounts, directors, and miscellaneous equipment aboveboard. A plastic strippable coating is applied by means of equipment quite similar to conventional paint sprayers. Identified as Naval Specification OS 3602 the plastic is a combination of vinyl acetate and vinyl chloride, copolymerized. The first coat is a variation of the solution identified as a webbing compound, applied over a base formed by scotch tape placed at intervals of 15 to 20 in., although the webbing compound has been known to bridge over a gap as large as 48 in. Subsequent coats are applied without the webb-forming ingredient and pigmented to assure proper coverage of each coat. The fifth and final coat contains an aluminum pigment which will stand attack by the weather. The compound plastic coating has great elasticity, strength and toughness.

A New Corrosion-Protection Technique

By JOHN ANTHONY

The Navy has also begun to investigate the use of metal housings as a more permanent form of packaging than the plastic protection type. These housings, to be made of 16 to 22 gage steel in sections shaped like orange peels will be assembled by welding aboard ship and the joints sealed with caulking compound or Liquid Envelope, a proprietary product identified as a modified vinyl polymer of Better Finishes and Coatings, Inc. of Newark 5, N. J. This plastic adheres well to metals but may be readily stripped-off when desired.

The dehumidification of the topside packaging, both plastic and metal, is handled by static technique employing desiccans of silica gel which are removed and replaced when their dehumidifying capacity is no longer effective. A porthole is provided in each package in order to observe instruments indicating temperature and per cent of humidity within the package. The C. M. Kemp Co. has developed a portable dehumidifier unit employing both types of desiccant material for use in deck packages which has a water removal capacity of 5 lb per day.

When dynamic dehumidifiers were first developed in 1944 the capacity of a single machine was sufficient to remove the moisture from 100,000 cu ft of air. This capacity has now been increased to handle 300,000 cu ft of air and a machine is now under test which more than doubles the latter capacity.

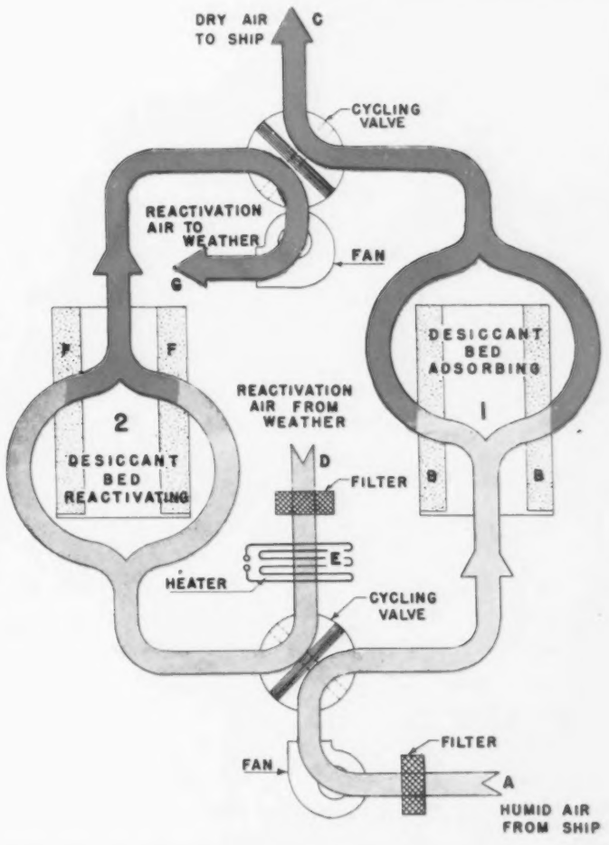
The Navy has also developed a series of preservative materials identified as thin film for coating all unpainted metal parts even in dehumidified areas. Grade 1 is used above decks, on firesides of boilers and stack uptakes. It contains paraffin wax and litharge 45 pct, kerosene 55 pct. Coverage is 800 to 1000 sq ft per gal. Drying time is 5 days, second coat may be applied in 24 hr. Grade 2 is used below decks for all types of auxiliary equipment. It contains 35 pct wax or wool grease and 65 pct kerosene. Its coverage is 1000 to 1600 sq ft per gal. The drying time is 4 months, although a second coat may be applied within 12 hr. Grade 3 is used anywhere below decks, particularly on surfaces which have been in contact with steam or water. It contains 25 pct wax or wool grease together with sulfonated oil, 75 pct kerosene. It covers 8000 to 16,000 sq ft per gal. It drys in 4 months and a second coat may be applied in 6 hr.

Any grade of these preservatives may be readily removed with a solvent when the time comes for reactivation of the vessels, but grade 3 is designed to emulsify with water for removal.

Since the atmospheric pressure is greater during the night, humid air breathes into the ship and during the day the dry air leaks out of the ship since the pressure is greater than the atmosphere. This cyclical phenomenon results in moisture entering the vessel. In order to minimize the effect, the Navy has arranged to have all vessels painted in a special haze gray with an undercoat of zinc chromate primer. Aside from the preservative characteristics of this treatment, the light gray color tends to reflect heat rays and thus minimizes this type of breathing.

Once the process of dehumidification has been started, and long before the optimum per cent of humidity has been reached, it is the opinion of experienced investigators that no more corrosion takes place. This is believed to be due to the removal of dust and gases such as SO_2.

The Navy has been careful in working out its inactivation preparations to consider the need for possible immediate reactivation of the fleet and estimates that only 10 days will be required to place an inactivated vessel back in service and 30 days for a decommissioned vessel. The cost of materials for inactivation is estimated to be $25,000 for a cruiser and $45,000 for a battleship. The cost of a dehumidifying machine is reported to approximate $1300 and a recorder-controller costs $600.



DEHUMIDIFICATION CYCLE: *Moisture laden air enters the machine at A and leaves its moisture in No. 1 desiccant bed at B and is returned to the ship at C. Air is drawn from outside at D, is heated and passed to No. 2 desiccant bed which gives up its moisture to the hot air and is thereby reactivated.*

International Harvester Strike Settled Following Concessions by Both

Chicago

• • • **A compromise** agreement signed recently, involving further concessions by the company, this week ended the 80-day old strike at 11 plants of International Harvester Co. following ratification by the United Farm Equipment Workers (CIO).

The agreement hinged on issues other than wages, the company having agreed Mar. 31 to meet an 18¢ wage boost recommended by a fact finding panel.

Both the company and the union gave ground, with the union obtaining concessions on several points which it considered particularly important. Among these was the allowance rules settlement in which Harvester's incentive pay system, which it had stated it was "determined to preserve," received considerable modification. On the other hand, the company successfully held out against the closed shop and against union domination of hiring and firing. A 7-day escape period was provided for the 1-yr contract term on maintenance of membership, and the company will check off these union fees, dues and small assessments.

The union's annual wage demand was sidetracked, but a liberalized vacation plan, including three weeks vacation for 15 yr of service, incorporated. The union had asked three weeks for 5 yr service.

The union won liberalized pay provisions for its stewards.

In another wage action affecting the farm equipment field, approval has been given for price relief purposes by the Regional Wage Stabilization Board of an 18¢-hr wage increase granted employees of the South Bend, Ind., plant of Oliver Corp. The adjustment was the first to be approved locally on the criterion of wages paid by related industries under the executive order of the president. The increase could not be made upon the basis of maladjustment as wage rates had already been raised to allowable 33 pct above January, 1941, levels and thus was made on the basis of geographical relationship with the Studebaker Corp.

Coming Events

Apr. 22-27 National Plastics Exposition, New York.

Apr. 24-26 American Institute of Mining and Metallurgical Engineers, openhearth, blast furnace and raw material conference, Chicago.

Apr. 28-May 2 American Ceramic Society, annual meeting, Buffalo.

Apr. 29-30 National Welding Supply Assn., bi-annual convention, Dayton.

Apr. 30 Traffic Club of Pittsburgh, annual dinner, Pittsburgh.

May 6-7 Assn. Iron & Steel Engineers, spring conference, Chicago.

May 6-10 American Foundrymen's Assn., golden jubilee convention and exposition, Cleveland.

May 23 American Iron & Steel Institute, general meeting, New York.

May 29-31 Machinery Dealers National Assn., Atlantic City, N. J.

June 2-7 Society of Automotive Engineers, summer meeting, French Lick, Ind.

June 3-5 American Gear Manufacturers Assn., annual meeting, The Homestead, Hot Springs, Va.

June 13 Metal Powder Assn., spring meeting, New York.

June 17-18 American By-Product Coke Institute, first annual meeting, Seaview Country Club, Absecon, N. J.

June 17-20 American Electroplaters Society, annual convention, Pittsburgh.

June 24-28 American Society for Testing Materials, annual meeting, Buffalo.

Sept. 10-14 American Chemical Society, exposition, Chicago.

Sept. 11-12 Society of Automotive Engineers, national tractor meeting, Milwaukee.

Sept. 16-20 Instrument Society of America, first conference and exhibit, Pittsburgh.

Oct. 3-5 National Electronic Conference, Chicago.

Claims Steel Shortage Hinders RR. Building

• • • **Execution of the big** rehabilitation program of the railroads is being seriously retarded by the steel shortage and by diversion of lumber to construction, Stephen Early, now vice-president of Pullman, Inc., said here recently.

While the railroads have placed orders for thousands of new passenger and freight cars, the difficulties being encountered in securing parts to build them are holding deliveries to a minimum, he declared.

"In seeking materials to accomplish rehabilitation, the railroad industry finds itself in a highly competitive market. Materials are being directed into other channels and, to add to the difficulty, strikes in plants of suppliers are holding up parts that were actually scheduled for delivery months ago."

Mr. Early indicated that while Pullman-Standard is well along in deliveries of its first orders for postwar passenger cars, their early appearance in sizable numbers may be delayed beyond original completion schedules. "The variety in volume of materials required in passenger car construction make large stockpiles essential and until supplies are assured in a steady flow it will be impossible to reach full output capacity. This may take months," he said.

Weekly Gallup Polls

Large Majority Favor Minimum Wage Legislation

Princeton, N. J.

• • • **Congressional action** to increase minimum wage levels fits in closely with the thinking of the majority of American voters, according to George Gallup, director, American Institute of Public Opinion.

The figure provided in the original Administration bill—65¢ per hr—is acceptable to a very substantial majority of the voting population, a coast-to-coast poll indicates.

The issue is one of vital concern to the common man, since more than 20,000,000 people are employed in occupations covered by the minimum wage legislation adopted in 1938. The level of wages in industries covered by the act will have considerable influence on the wage level of occupation not covered.

From coast to coast interviewers for the institute questioned voters in a survey conducted along the same methods used in forecasting the last presidential election with an error of less than two points.

The issue was put to voters in this form:

"At the present time the minimum wage that can be paid to workers in every state in most businesses and industries is 40¢ an hr. This means that all persons working in such businesses, in every state, including young people who have never worked before, cannot be paid less than 40¢ an hr. Would you approve or disapprove of raising the minimum to 65¢ an hr?"

The vote:

	Pct
Approve	65
Disapprove	29
No opinion	6

A similar poll was conducted last August. It showed that among those familiar with the meaning of the term minimum wage, 56 pct favored a 65¢ minimum, while 32 pct were opposed and 12 pct had no opinion.

The current survey finds considerably less support among Republican voters and among farmers for a 65¢ minimum than among Democratic voters and city workers.

The group most in favor is labor union members.

Following are the votes of the group:

	Approve Pct	Disapprove Pct	No op. Pct
Democrats	70	25	5
Republicans	59	36	5
Union members	80	14	6
Farmers	50	42	8

In other words there appears to have been an increase of sentiment favorable to a 65¢ minimum since last summer. The public has observed substantial wage increases in the automobile, steel, electrical and other basic industries, and these boosts have undoubtedly affected public thinking about wage minimums.

All through the recent General Motors strike the public was in favor of granting a 15 pct increase to the automobile workers.

Minimum wage and social security legislation were two of the main cornerstones of the New Deal social program under President Roosevelt. When the original Wage and Hour Control bill came up for discussion in 1938, institute polls found it a popular measure with the people. In a poll in May of that year, 59 pct of voters with opinions on the subject favored Congressional passage of wage and hour laws.

• • • **Seven out of every ten** voters of the country think Congress should do something about strikes.

This is an opinion which is also shared by a slight majority of the members of labor unions, many of whom have themselves been affected by the great wave of strikes which have swept the country since VJ-Day.

Bernard Baruch's recent proposal for a moratorium on all strikes for 1 yr thus appears to be a reflection of general public concern over strikes.

Sentiment today favoring some

American People Support Passage Of 65¢ an Hr Minimum Wage Law And Congressional Strike Action

o o o

Congressional action on the strike front is almost as high as it was last February, before settlement of the steel, G.M., and electrical strikes.

Moreover, these findings do not include public reaction to the work stoppage of Lewis' coal miners, which began Apr. 2.

The present poll utilizes the same methods with which the institute accurately forecast the outcome of more than 100 elections during the past ten years.

The question in this poll:

"Do you think that Congress should or should not do anything about the strike situation?"

The replies:

	Pct
Should	70
Should not	18
No opinion	12

The majority among union members included in the poll also vote in favor of having Congress take some steps in connection with strikes, although here the majority is smaller than among all voters polled on the question:

Union Members

	Pct
Should	52
Should not	36
No opinion	12

Those among the voting public favoring some action were asked, "What should Congress do?"

No matter what the merits of individual strikes, the public's idea of how to cure strikes is heavily on the side of curbing labor unions, rather than on the side of curbing management or a general policy of granting wage increases.

Here is the way the replies to

(CONTINUED ON PAGE 134)

Labor Department Streamlines Its Conciliation Service

Washington

• • • As the most active government agency in the settlement of industrial disputes, the U. S. Conciliation Service now occupies a unique position. It is unique because the methods that conciliators always use rest entirely on voluntary negotiation and mediation. In actual practice, this means stressing the human angle in industrial relations, the undercover animosities, the fears and personal prejudices that so often block the way to industrial peace.

Following a period of wartime controls which largely supplemented, and often superseded, genuine collective bargaining, the return to voluntary techniques was neither simple nor easy. Moreover, this return took place in an atmosphere that was far from conciliatory.

The general background — management's uneasiness over its reconversion problems and labor's equally legitimate concern over reductions in take-home pay and the threat of large scale unemployment —is well known. In addition, government itself faced broad policy problems that were bound to affect both labor and management as they faced each other across the conference table.

Given such a "climate," it may seem naive to emphasize the importance of human relations in labor-

By EDGAR L. WARREN
Director, U. S. Conciliation Service
U. S. Dept. of Labor

o o o

management disputes. Disputes which apparently center on basic economic issues—wages and hours, working conditions, union security, and the like. Surely such issues far over-shadow the personal attitudes of employer and employee representatives who sit down to bargain.

The answer would seem to be "yes," until the problem is more closely examined. The men who sit down to bargain usually bring with them a personalized version of both the immediate issues and those broader areas of conflict that make up our social and economic climate.

It is against this background that disputes between labor and management must be settled. Quite apart from the merits or demerits of a particular case, these outside forces will be at work, putting pressure on both sides. Given that general situation it is obvious that commissioners of conciliation have a unique opportunity. That opportunity, as the Harvard Business Review says, is created by the "need for insight into human behavior, into the forces that make for conflict and cooperation."

The record of disputes (see table I) settled since VJ-Day shows that these men are able to fill that need in the vast majority of cases.

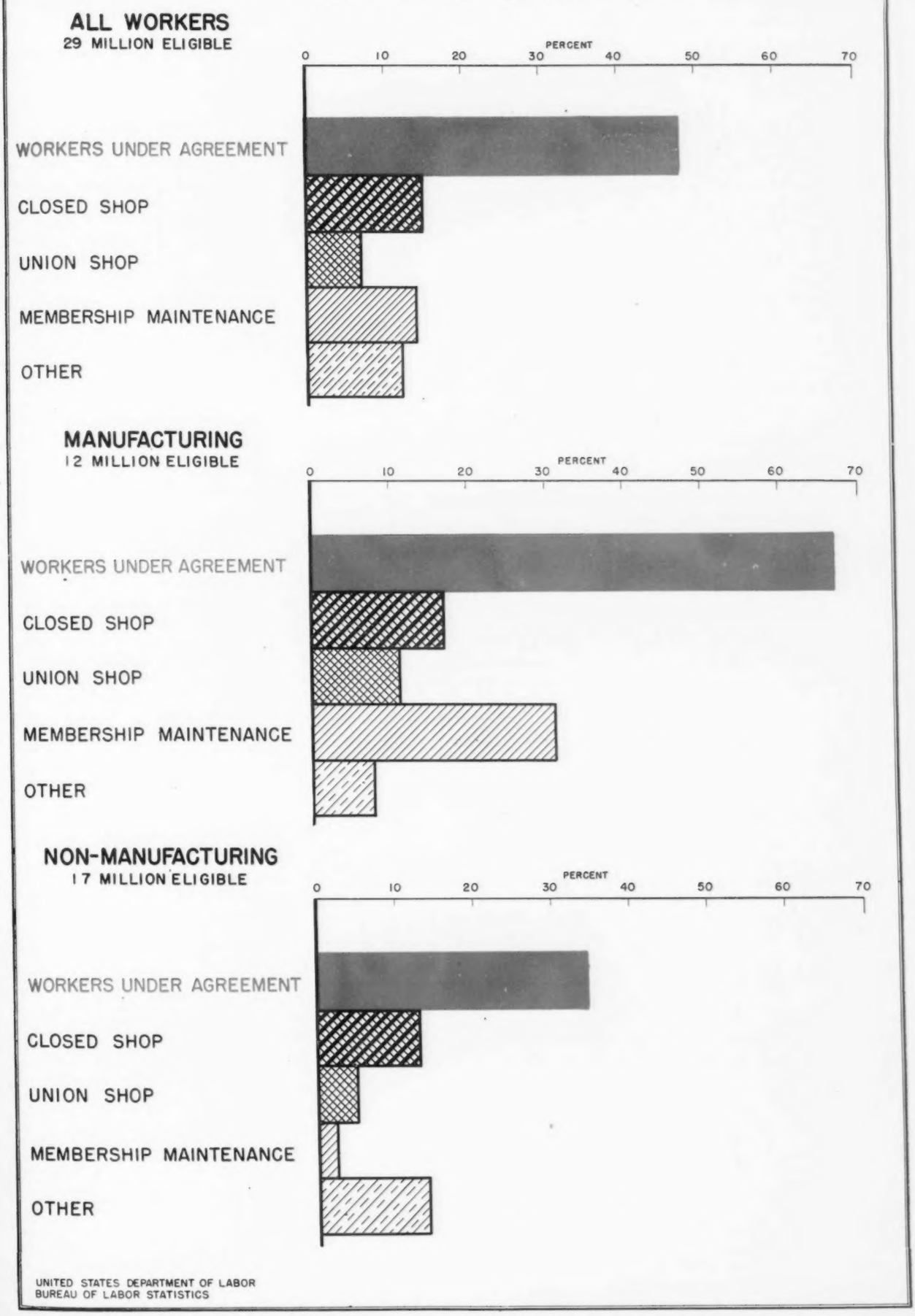
In the metalworking industries, the record is equally impressive, I think. Especially when we remember that large sections of the industry had only a speaking acquaintance with collective bargaining. And even that brief experience was largely interrupted by wartime controls. Nor should we forget that many of the bitterest industrial conflicts during the late thirties centered around the ques-

UNION RECOGNITION: *The chart opposite graphically illustrates the type of union recognition of workers covered by agreements in 1945. Of the 29 million workers eligible for union agreements approximately 15 pct were employed in closed shops. Maintenance of membership clauses affected a slightly lower percentage while a little less than 10 pct were in union shops. Maintenance of membership agreements, it can be seen, were more popular in manufacturing industries than in nonmanufacturing enterprises. About one third of manufacturing employees worked under this clause.*

TABLE I

Situations Disposed of by the United States Conciliation Service Classified by Manufacturing Industries
Aug. 15, 1945 (VJ-Day) through Feb. 28, 1946

INDUSTRIES	Strikes		Threatened Strikes		Controversies		Arbitration		Technical		Other Situations		TOTAL	
	No. of Companies	No. of Employees	No. of Companies	No. of Employees	No. of Companies	No. of Employees	No. of Companies	No. of Employees	No. of Companies	No. of Employees	No. of Companies	No. of Employees	No. of Companies	No. of Employees
Iron and steel	247	144,571	235	75,026	432	132,886	66	7,906	9	2,969	77	6,336	1,116	369,694
Nonferrous metals	47	42,519	79	43,105	144	46,219	23	880	10	2,311	19	7,028	322	142,062
Machinery	101	80,038	160	87,810	350	143,816	43	3,098	3	707	46	770	708	316,239
Electrical machinery	33	131,197	56	33,259	157	117,137	20	2,428	4	1,245	25	1,933	295	292,202
Transportation equipment	81	117,446	70	77,993	311	370,449	29	3,784	1	34	30	1,745	522	571,451
Automobiles	26	25,270	44	35,375	84	88,213	18	2,594	.....	.....	25	232	197	151,704
SUB-TOTAL	535	541,041	644	357,568	1,528	898,720	204	20,660	27	7,266	222	18,097	3,160	1,843,352
Other industries	1,060	498,074	1,535	641,328	3,047	889,949	332	43,962	46	7,101	643	74,223	6,663	2,154,637
GRAND TOTAL	1,595	1,039,115	2,179	998,896	4,575	1,788,669	536	64,622	73	14,357	865	92,320	9,823	3,997,939



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

tion of union recognition itself. Most of the principals in those earlier struggles are active in the labor-management picture today.

One of the few unanimous recommendations of the President's Labor-Management Committee was for a stronger Conciliation Service. Two committees were appointed to study this matter and make recommendations. Early in February a realignment of the organization of the service got under way.

In working out this realignment of functions and selecting the men who are to carry out the program to strengthen the Conciliation Service, the experience and personnel of the National War Labor Board were drawn heavily on. These men, trained in the procedure of the board, where organized labor and organized industry were equally represented, will bring with them the same spirit of complete impartiality that is a must for every conciliator.

The personnel involved in the realignment include: Howard T. Colvin, long-time assistant director of the service, promoted to associate director, and four former WLB men who will fill key positions in the Washington office. Fred E. Desmond, former deputy executive of the War Labor Board, was made director of field operations; William G. Brown, former chairman of the Chicago Regional WLB, heads the Technical Services; W. Ellison Chalmers, former chairman of the War Shipping Panel of the WLB and previously chief of the War Production Drive Division of WPB, was made director of Procedures and Training; Saul Wallen, a former Labor Dept. employee and wartime chairman of the Boston Regional WLB, serves temporarily as acting director of the Arbitration Div.

A new field office at Akron, Ohio, deserves special mention at this time because it is the first office of the Conciliation Service to be devoted solely to the labor-relations problems of one industry. Paul W. Fuller, a conciliator who has been assigned to the rubber industry for the last 4 yr, is in charge.

Interestingly enough, on Mar. 2, executives of the "Big Four"—Firestone, Goodyear, Goodrich and U. S. Rubber — signed a contract with the CIO's United Rubber Workers. During a long period of negotiations, beginning in November, Mr. Fuller took an active part in the discussions that led to this agreement.

While the establishment of the Akron office for a single industry is in the nature of an experiment, it may be followed by a similar procedure for other large industries which have common problems. One obvious advantage of this method is that it enables commissioners who specialize in a given industry to become more familiar with both the problems and personalities involved.

Another feature of the new program is an expanded training period for new commissioners of conciliation. Though these men come from many different walks of life, they are very carefully selected—with heavy emphasis on proved ability to handle people. Among some 25 commissioners at a recent training course one had been a high school principal, another had spent 7 yr in industrial relations, several were lawyers experienced in labor litigation. One commissioner, with many years of experience in personnel work, also had served as vice president of a bond underwriting house. Another conciliator had five campaign stars from World War II. In short, these men are a very good cross-section of America.

The conciliation process is voluntary and directed primarily toward bringing the parties together around the conference table. Simple as it sounds, this conference table method is a key step in conciliation. It frequently requires careful spade work to set the stage for these negotiations.

Typically the commissioner's first task after he is assigned to a case is to get a clear, rounded picture of the whole situation, both the formal issues and the personal, human under-currents that may block the way to real negotiation. Necessarily, the patterns that develop are as varied as the people who take part in these disputes. Conciliators begin their preliminary survey by talking privately with representatives of each side. Repeated interviews may be necessary before the conference stage is reached.

Rather than describe an individual case—no two are ever alike—it will suffice to outline three sets of troublesome conditions that commissioners may have to face.

In the first, and usually the most difficult, both sides feel pretty confident that they can win if a showdown comes. Or, piled up differences may have created so much tension that the parties are spoiling for a fight. In either of these situations the conciliator has two main concerns. He must discover some means whereby he can open or reopen negotiations between the parties and he must convey to both sides the probable cost of a work stoppage.

In the second instance a commissioner learns that management does not want to deal with the union and feels strong enough to refuse all demands. In these circumstances the commissioner's chief task is to sell the idea of collective bargaining. He may do this by pointing out the value of stable, friendly industrial relations and the dangers inherent in a labor policy which largely disregards or ignores the viewpoint of employees.

A third instance presents just the opposite situation, namely the case where a powerful union feels strong enough to enforce all of its demands. Here, too, the commis-

(CONTINUED ON PAGE 131)

TABLE II

Type of Union Recognition of Workers Covered By Union Agreements in 1945 in Iron and Steel Industries

Industry	Total Employed (thousands)	Workers Under Agreement, Pct	Type of Recognition of All Employed			
			Closed Shop	Union Shop	Membership Maintenance	Other
Basic Iron and Steel	461.6	95	....	2.8	88.4	3.8
Foundries	168.0	75	3.8	24.0	39.0	11.2
Other Iron and Steel Products	873.4	70	4.9	18.2	36.4	10.5
Iron Mining	24.1	90	....	3.0	87.0	....

AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1946

Based on Reports by Companies which in 1944 made 97.9% of the Open Hearth, 100% of the Bessemer and 86.7% of the Electric Ingot and Steel for Castings Production

Period	Estimated Production—All Companies								Calculated weekly production, all companies (Net tons)	Number of weeks in month
	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL			
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
* January	3,528,090	51.1	207,512	47.4	136,452	29.2	3,872,054	49.6	874,053	4.43
* February	1,300,944	20.9	25,905	6.6	65,668	15.6	1,392,517	19.8	348,129	4.00
† March	5,982,559	86.7	363,949	83.1	188,140	40.3	6,534,648	83.7	1,475,090	4.43
† *1st Quarter*	*10,811,593*	*54.0*	*597,366*	*47.0*	*390,260*	*28.8*	*11,799,219*	*52.1*	*917,513*	*12.86*
April										4.29
May										4.43
June										4.29
2nd Quarter										*13.01*
1st 6 months										*25.87*
July										4.42
August										4.43
September										4.28
3rd Quarter										*13.13*
9 months										*39.00*
October										4.43
November										4.29
December										4.42
4th Quarter										*13.14*
2nd 6 months										*26.27*
Total										52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,558,041 net tons open hearth, 98,849 net tons Bessemer and 105,491 net tons electric ingots and steel for castings, total 1,762,381 net tons; based on annual capacities as of January 1, 1946 as follows: Open hearth 81,236,250 net tons, Bessemer 5,154,000 net tons, Electric 5,500,290 net tons, total 91,890,540 net tons.

* Revised.
† Preliminary figures, subject to revision.

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YEAR 1945

Based on Reports by Companies which in 1944 made 97.9% of the Open Hearth, 100% of the Bessemer and 86.7% of the Electric Ingot and Steel for Castings Production

Period	Estimated Production—All Companies								Calculated weekly production, all companies (Net tons)	Number of weeks in month
	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL			
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	6,468,815	90.5	379,062	76.0	358,346	77.3	7,206,223	88.8	1,626,687	4.43
February	5,967,842	92.4	347,227	77.1	339,520	81.1	6,654,589	90.8	1,663,647	4.00
March	6,927,377	96.9	398,351	79.8	382,237	82.4	7,707,965	95.0	1,739,947	4.43
1st Quarter	*19,364,034*	*93.3*	*1,124,640*	*77.6*	*1,080,103*	*80.2*	*21,568,777*	*91.6*	*1,677,199*	*12.86*
April	6,541,097	94.4	372,952	77.2	377,877	84.1	7,291,926	92.8	1,699,750	4.29
May	6,663,577	93.2	402,100	80.6	386,075	83.3	7,451,752	91.8	1,682,111	4.43
June	6,129,266	88.5	379,807	78.6	333,217	74.2	6,842,290	87.1	1,594,939	4.29
2nd Quarter	*19,333,940*	*92.1*	*1,154,859*	*78.8*	*1,097,169*	*80.6*	*21,585,968*	*90.6*	*1,659,183*	*13.01*
1st 6 Months	*38,697,974*	*92.7*	*2,279,499*	*78.2*	*2,177,272*	*80.4*	*43,154,745*	*91.1*	*1,668,139*	*25.87*
July	6,318,463	88.6	381,832	76.7	286,713	61.9	6,987,008	86.3	1,580,771	4.42
August	5,171,925	72.3	347,088	69.5	217,363	46.9	5,736,376	70.7	1,294,893	4.43
September	5,435,358	78.7	352,847	73.2	195,156	43.5	5,983,361	76.3	1,397,982	4.28
3rd Quarter	*16,925,746*	*79.9*	*1,081,767*	*73.1*	*699,232*	*50.9*	*18,706,745*	*77.8*	*1,424,733*	*13.13*
9 months	*55,623,720*	*88.3*	*3,361,266*	*76.5*	*2,876,504*	*70.4*	*61,861,490*	*86.6*	*1,586,192*	*39.00*
October	5,146,370	72.0	242,122	48.5	209,290	45.1	5,597,782	69.0	1,263,608	4.43
November	5,640,850	81.5	358,664	74.2	201,866	44.9	6,201,380	78.9	1,445,543	4.29
December	5,522,829	77.4	343,266	68.9	192,704	41.7	6,058,799	74.8	1,370,769	4.42
4th Quarter	*16,310,049*	*76.9*	*944,052*	*63.8*	*603,860*	*43.9*	*17,857,961*	*74.2*	*1,359,053*	*13.14*
2nd 6 months	*33,235,795*	*78.4*	*2,025,819*	*68.5*	*1,303,092*	*47.4*	*36,564,706*	*76.0*	*1,391,881*	*26.27*
Total	71,933,769	85.5	4,305,318	73.3	3,480,364	63.7	79,719,451	83.5	1,528,950	52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,614,338 net tons open hearth, 112,658 net tons Bessemer and 104,640 net tons electric ingots and steel for castings, total 1,831,636 net tons; based on annual capacities as of January 1, 1945 as follows: Open hearth 84,171,990 net tons, Bessemer 5,874,000 net tons, Electric 5,455,890 net tons, total 95,501,480 net tons.

Calls for Rationing Of Lead Supplies to Meet Most Critical Needs

Washington

• • • **With current** domestic lead production cut by labor disputes to a 250,000 ton annual rate, or 50 pct of the normal rate of 500,000 tons, CPA on Apr. 11 issued a statement of policy calling upon producers and smelters to adopt voluntary rationing measures to spread the available lead supply to meet the greatest number of immediate needs. At the same time the government agency froze the government lead stockpile at its present level and established plans to channel surplus property supplies to industrial users.

"The situation is such that even after the settlement of all present strikes, it will be a considerable time before full resumption of production is reached again," CPA said. "Every consumer of lead will be in a hardship status due to the reduction in supplies during this period."

In view of this situation, the CPA has requested conformance with the statement of policy outlined below:

(1) Lead producers shall ration all deliveries so that no individual or class of customers will receive more lead than is needed for immediate use.

(2) All types of lead fabricators shall supply the minimum needs of the largest possible number of their customers giving to each a fair proportionate share.

(3) PR-32 will continue present restrictive inventory provisions.

(4) The government stockpile will be frozen at its present level and will only be released for emergency maintenance and repair uses which have to do with public health and safety, such as, requirements of hospitals, public utilities, and transportation facilities, if lead is unobtainable elsewhere.

(5) During this emergency the Tin, Lead & Zinc Branch will work closely with the War Assets Administration to keep them informed of manufacturer's urgent needs for tin, lead, and tin-lead alloys available from government-owned surplus which will keep plants operating. Such persons may make their needs known to the Tin, Lead & Zinc Branch, Civilian Production Administration who will forward them immediately to the War Assets Administration for their consideration.

GE Orders Off 72 Pct

Schenectady

• • • **Orders received** by the General Electric Co. during the first quarter of 1946 amounted to $111,775,000 compared with $395,466,000 for the corresponding period of 1945, a decrease of 72 pct, President Charles E. Wilson announced recently.

"Much of this reduction in orders was accounted for by the fact that all of the company's principal plants were closed by a strike for nine weeks during the quarter ended Mar. 31, 1946," Mr. Wilson stated. "This meant that a substantial volume of business in those products which normally can be shipped immediately could neither be recorded as orders nor delivered to our customers in the first three months of this year."

Portugal Orders Liners

London

• • • **Two liners** of 14,000 net tons have been ordered from John Brown & Co., Clydebank, England, by Portuguese owners.

SUMMARY OF UNITED KINGDOM STEEL STATISTICS

Source: British Iron and Steel Federation

All Figures Thousands of Net Tons	STEEL			PIG IRON	SCRAP	IRON ORE	
	Ingot and Castings	Finished Deliveries	Steel Stocks (2)	Production (1)	Steelmaking Consumption	Imported Ore Consumption	Home Production
1944 Total	13599.0	11502.4	2431.5	7542.0	8252.6	2725.6	17332.2
1945 Total	13237.8	9992.3	1885.9	7959.4	8065.9	4494.7	15870.4
1945 January	1211.2	885.9	1885.9	711.7	737.5	293.4	1565.2
February	1081.4	863.7	1814.7	612.4	664.8	258.0	1397.7
March	1102.5	885.2	1747.0	633.4	670.2	270.1	1475.7
April	1059.9	842.2	1688.9	616.4	651.8	287.6	1414.7
May	1180.4	924.0	1630.4	717.9	724.0	343.8	1626.8
June	1067.5	835.0	1566.9	595.8	680.5	307.7	1289.3
July	956.9	695.3	1475.4	603.9	597.1	347.2	1228.8
August	1041.0	796.8	1434.4	701.1	619.3	436.2	1239.2
September	1077.8	792.5	1415.4	624.9	650.0	438.1	1102.5
October	1360.8	932.4	1356.8	818.1	818.1	595.2	1385.4
November	1106.1	803.7	1358.0	672.0	659.9	467.7	1115.5
December	992.3	735.6	1332.4	651.8	592.7	449.7	1036.6
1946 January	1025.0	971.0	1370.9	803.6	753.2	541.5	1373.6
February	1107.5	828.0	1339.3	654.5	653.6	445.8	1147.3

[1] All qualities, including ferroalloys.
[2] Held by producers and in British Iron and Steel Corp. stockyards at the beginning of the years and months shown.

The London ECONOMIST

Green Chairs in the Bronx

Hunter College, N. Y.

THE symbol of the Security Council meetings in New York is paradox. Nothing is what might be expected, from the floor of the press room, which looks to be solid, to the case presented by the Iranian Minister, which gives a not dissimilar feeling of illusion. The meetings are in New York, but they are held amid greening fields from which no skyscraper is visible. The matter under discussion is an alleged threat to the peace of the world, but the abilities most in evidence are not those of delicate negotiation leading to amicable settlement. What strikes the eye and the ear is the high development of those engineering skills by which men subdue continents, build great cities and make war. The Council Chamber, constructed in 17 days and nights within a space formerly occupied by a college gymnasium, is a miracle of the most modern comfort and efficiency, but no such miracle has touched the human processes which stumble along within its soundproofed walls.

The visitor, emerging blinking from the underground (which has there become the elevated) or rattling up in one of the war-worn taxicabs, is first impressed by empty distances and second by the paradox of that scene in that place.

The Bronx is not a tidy or an impressive section. Nor is it one to which 11 nations would normally be expected to come for the purpose of safeguarding the peace of the world. Nationals of as many countries undoubtedly live there, but chiefly because housing on the outskirts of the city is relatively cheap. The Bronx is an administrative unit, it is also a state of mind, and the only one of New York's five boroughs which occupies mainland territory. Surprisingly rural until after World War I, it still preserves its country prides and prejudices, and thereby becomes the butt of endless jokes from its more metropolitan neighbors. To a Londoner it must be fairly reminiscent of Hackney. Its side streets are raw and shabby, its traffic backbone is flanked on each side with a continuous row of flats almost identical in design which are occupied by clerks, small merchants, garment workers, artisans. Nothing about its stereotyped facades or its slovenly back yards prepares one for the marshalled flags, the heavily guarded gates, the air of vast importance with which police escorts wave official limousines into the flat campus of Hunter College as neighbors gather to watch.

HUNTER College, which had barely won its Bronx buildings back from the WAVES (the women's naval organization) before they were commandeered by UN, is the last step in the free education for women provided by New York. Its Bronx unit consists of half a dozen structures, machine-age Gothic in design, with Oxford overtones, set primarily on wide lawns which the spring rains turned suddenly green between the first and third sessions of the Council. This is not what New York is supposed to look like. Acres of empty pavement and vacant lots surround the campus on three sides; the patrolling police huddle together at entrances with a city man's dislike of spaces too open for interest. Behind the campus lies a sprawling suburbia, and in front of it embattled Westchester, where UN would like to establish a permanent home if the owners of country houses there can be brought to consider something beyond the ends of their indignant noses. So far, those owners are as intransigent as the labor unions which insist on hampering the Council's smooth running by holding to the right of union rules and jurisdictional disputes whether the world ends or not.

Reprinted by special permission to further understanding on how political and economic affairs are viewed in London.

o o o

Inside, the space provided for the physical culture of young ladies lends itself with surprising success to the needs of the nations. Delegates and distinguished visitors enter the front door, journalists, radio men and photographers pop in and out of the basement door at the back, worm through locker rooms to the improvised writing space flanked by telephone booths and telegraph offices. The Council Chamber itself has been transformed so completely that no trace of its athletic past is left. What one sees is an oblong room in a vibrant shade of what used to be called ashes of roses, the walls hung with pleated curtains which perform the double function of decoration and sound deadening, the ceilings set with angled lights that rise to photographable intensity for speeches and dim for translation, the only other colors the soft gold of bleached mahogany which forms the delegates' table and the soft green which in this instance has been transferred to their chairs. The golden table is made in the shape of a flattened semi-circle around which the delegates sit. They face another golden table, this one T-shaped for translators, and beyond that the world.

THAT the world is here no one doubts, least of all the delegates. Two hundred and twenty-eight seats for the seven hundred members of press, radio and photographic services who applied

(CONTINUED ON PAGE 135)

Swelling Farm Demand and Quota Restrictions Plague Mail Order Houses

BY CHARLES T. POST

Chicago

• • • **Swelling farm demand** coupled with sharp quota restrictions and delayed deliveries have pushed the nation's two biggest mail order houses into a tight corner on steel and hardware items.

One house, which returns unfilled 30¢ worth of orders for every $1.00 worth of orders filled on its lines as a whole, finds that on some farm steel lines it is filling only 10 pct of demand through mail orders and its retail stores. Estimates of potential volume made when catalogs were compiled have proven far short of actual demand.

Barbed wire, nails, and wire cloth are in such short supply that one firm is buying nails for use on a store which it is building. A cut in current quotas from 90 pct of the base year, 1941, to approximately 65 pct by one supplier is only part of the bad news, for nail receipts are far behind quota levels. One firm estimates that supplies will limit its 1946 nail volume to about 50 pct of 1945. Pressure is reported from nail makers for limiting of orders to galvanized and cement coated nails and elimination of uncoated nails presumably because of the profit angle.

The situation is similar in barbed wire and fencing, although shipments have been closer to quota levels. Dollar volume has been raised in relation to unit sales by recent price increases, but even taking this factor into consideration is approximately 25 to 30 pct below last year.

Shortage of galvanized roofing has resulted in volume on this staple farm item falling far below that on aluminum roofing. The demand is such that aluminum sheets are being sold without forming in some instances. Wholesale buyers are watching this sharp competition closely from a price standpoint, and some are willing to bet that aluminum will give galvanized a good run for its money even when the latter is more freely available provided the price differential is not too great. Steel company promotion on galvanized items, incidentally, is coming in for some criticism from merchandising departments. They claim that the steel companies are so intent on selling the superiority of their own particular method of galvanizing that they have forgotten to emphasize what the material can do for the customer.

The policy of sticking by catalog prices as long as a catalog is current is creating a profit squeeze on catalog sales in the case of steel items on which prices have been raised. The policy foreshadows a problem on other items as price advances are made.

The long term policy both in steel and hardware is standardization rather than broadening of lines, and wartime regulations eliminating small variations will be made to stick if possible.

Normal peacetime demand is being met on many hardware items, but the current call for goods spurred by high farm incomes is so far out of line with previous levels that many buyers must be turned away. Office of Price Administration policies are reported to be disrupting production on several staple items, notably lawn mowers, with old time suppliers being hard hit and only a trickle coming from newcomers to the field who have secured higher prices. Carpenters tools are short, but many mechanics tools are in better supply than during the war. Currently, the backwash of the steel strike is hitting hardware receipts as manufacturers have run through their inventories and have not been able to replenish them.

The current farm income, now about 2½ times normal, is regarded as an omen of good business for about 2 yr. In the farm building line, it is pointed out that about 40 pct of farm buildings need repair and good business is expected in this field for 3 or 4 yr.

Although the mail order firms have been able to do a considerable business on freak government surplus items, they have been handicapped on acquiring surplus government hardware because of classification as a large retailer which puts them at a disadvantage costwise in bidding against considerably smaller wholesale firms. Some of the freak items have been unexpected volume sellers, however, with one firm having sold two million ammunition boxes through its retail stores.

TOY DEMAND MOUNTS: *World-wide demand for British toys has set factories working at full pressure to meet export requirements. Here in Messrs. Lines' factory finishing touches are applied to toy motor cars to be exported, principally to the United States.*

Justice Dept. Raps Exemptions Offered In Bulwinkle Bill

Washington

• • • **Harsh criticism** of the basing point price system was voiced by Assistant Attorney General Wendell Berge when he appeared before the Senate Interstate Commerce Committee recently in opposition to the Bulwinkle Bill. The bill exempts Common Carriers' Joint Rate Conferences, when under Interstate Commerce Commission supervision, from the operation of the anti-trust laws.

Its application, he contended, resulted in interlocking agreements between the carriers and eastern iron and steel interests by which development of competitive business in the South and West was prevented. The committee should look into the "close working arrangements between eastern manufacturers and the railroads," he said.

Enactment of the measure as it stands, he declared, would legalize the "situations which we intend to reach with anti-trust laws and to prevent in the future unless stopped by the legislation here proposed."

The bill, he went on, provides anti-trust immunity not only "for strictly railroad activities but also possible immunity for a host of allied industrial activities."

Mr. Berge offered as an illustration of the alleged "vicious nexus" between railroad freight rates and industrial prices generally, the Geneva, Utah, government-owned plant which he said was a white elephant to the War Assets Administration, having been placed on the block four months ago with no takers as yet.

"Whether the government can dispose of this plant at a satisfactory figure and whether it may be operated profitably depends in a substantial degree upon the level of commercial transportation rates for iron and steel products," he declared.

Asked whether the ICC had ever figured out a "fair rate" between Geneva and the West Coast, Mr. Berge admitted that so far as he knew this hadn't been done. Senator Wheeler, Committee Chairman, then suggested that the government should file a petition with ICC asking a lower rate from Geneva to the Coast.

The chief purpose of basing point price systems as viewed by the Justice Dept. is "to perpetuate the historical industrial concentration in certain areas of the country." This had been employed fully in the Geneva case, it was contended, when the Defense Plant Corp. had sought reduced rates on iron and steel items from Geneva to the West Coast.

"The eastern iron and steel manufacturers were promptly consulted by the railroads when the proposal for reduced rates was first made," Mr. Berge asserted. "As a matter of fact, those manufacturers were invited to participate in discussions between the railroads and the government."

"The eastern manufacturers were vehement in their opposition to the request made by the government for reduced rates. It threatened the rigidity of the entire steel basing point system."

This and other complaints of the past restated by Mr. Berge were held by the Justice Dept. to clearly demonstrate intentions of eastern industrialists to use "every means within their power" to dominate the western market through control of the rate structure.

Steel Warehouse Group Elects New Officers

Cleveland

• • • **Northern Ohio** chapter of the American Steel Warehouses Assn., at a meeting Apr. 12, elected the following officers for the coming year: President, W. S. Bidle, Jr., S. A. E. Steel Co.; vice-president, J. W. Reichert, Decker-Reichert Steel Co.; secretary, William Springer, Jos. T. Ryerson & Sons; trustees, Robert Kyle, Burker Iron Co., J. H. Penske, Williams & Co., and W. C. Thompson, Hamilton Steel Co.

Roy J. Foster, retiring president of the Northern Ohio chapter, was elected chapter director.

At a banquet which followed, Norman W. Foy, general manager of sales of Republic Steel Corp., and a chairman of WPB's Steel Div. during the war, discussed some of the steel industry's postwar problems, bearing on the present steel shortage.

Mr. Foy said that aside from the problem of manpower, the steel industry cannot duplicate any of the wide continuous mills at this time in order to increase production, and it will take 2 yr under present conditions to duplicate one. "No expansion of capacity is feasible now," he pointed out.

Mr. Foy stated that no slump in steel demand had taken place, as many people had expected, and all of the 15,000,000 tons of steel capacity added during the war is not applicable to today's needs. Much of the capacity added during the war is in electric furnaces and plate mills, and many of the bar mills are of no use in the shortage because they were designed for heavy sections.

Some flat rolled capacity instead of expanding during the war, contracted, Mr. Foy asserted, and many handmills were dismantled.

AISI New York Meeting Scheduled for May 23

New York

• • • **The 54th general meeting** of the American Iron & Steel Institute will take place on May 23 at the Waldorf-Astoria in New York.

At the morning general session of members of the Institute, the speakers will be Walter S. Tower, Institute president; Dr. Leo Wolman, professor of economics, Columbia University; E. M. Voorhees, chairman, Finance Committee, U. S. Steel Corp.; Quincy Bent, vice-president, Bethlehem Steel Co.; and Walter E. Watson, vice-president, Youngstown Sheet & Tube Co.

A technical session will be held in the afternoon under the chairmanship of J. L. Mauthe, vice-president, Youngstown Sheet & Tube Co. Technical papers on subjects of general interest will be presented at this session by Herman Dobscha, Carnegie-Illinois Steel Corp.; S. D. Gladding, Bethlehem Steel Co.; Charles L. Potter, Jones & Laughlin Steel Corp.; and C. R. FonDersmith, American Rolling Mill Co.

The meeting will be concluded with the dinner session at which the principal speaker will be Dr. Harold G. Moulton, president of the Brookings Institution, Washington, D. C.

Industrial Briefs...

• TO BUILD NEW PLANT — American Brakeblok Div. of American Brake Shoe Co., has announced that 40 acres of land have been purchased in Winchester, Va., for the purpose of erecting a new plant to produce A-B-K safety tile and supplement the line of American Brakeblok friction materials. The building will cost approximately $500,000 with equipment.

• BUILDS NEW PLANT—Batson-Cook Co., West Point, Ga., has been awarded the general contract for the new $4,000,000 plastics processing plant which B. F. Goodrich Co. is building near Marietta, Ohio.

• NEW WAREHOUSE—The Ohio Stainless & Commercial Steel Co., Cleveland, has announced establishment of a new warehouse at 55th St. address which handles stainless steels, hot and cold rolled alloy steels, cold rolled carbon bars and tool steels.

• BUYS FOUNDRY — American Steel Foundries has purchased, on a bid of $1,290,000, the foundry of the government-owned Quad-City tank arsenal at Bettendorf, Iowa. Original cost of the plant, which was operated during the war by Campbell, Wyant & Cannon Foundry Co. for the manufacture of tank armor, was $2,486,919.

• FORMS PUMP COMPANY — A new company, Superdraulic Corp., Detroit, has been formed for mass production of a new type of hydraulic pump recently developed and announced by Hydraulic Machinery Co. The firm is now operating in the facilities of Hydraulic Machinery, Inc. Officers are: President, Harry L. Wise; vice-presidents, James Hoffer and Ted Nagel; secretary, John R. Davis; and, treasurer, Robert Wise.

• CUSTOM BUILT PRESS—Joshua Hendy Iron Works, Sunnyvale, Calif., which became an important factor in marine engine and ordnance manufacture during the war, has signed its first postwar contract for custom built machinery to manufacture three full color rotary offset printing presses for Time, Inc. The first press is scheduled to be completed this fall, with delivery of the second and third before the end of the year.

• ENTERS FOOD FIELD—Cleaver-Brooks Co., Milwaukee, manufacturers of steam generating and food processing equipment and other machinery, has joined with Clarence Birdseye, frozen foods pioneer, to form Processes, Inc. The new firm will develop, manufacture and license food processing equipment with emphasis in the dried foods field. Equipment will be licensed rather than sold.

• HOME APPLIANCES—The Yale & Towne Mfg. Co. has announced organization of a Buffalo Div. to manufacture household electrical appliances. Production will start in July or August in a plant at 2933 Main St., which is owned by the company.

• DAVIS TO GIDDINGS—The Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., has acquired the business and machinery of the Davis Boring Tool Co., St. Louis, and will move machinery and some personnel to Fond du Lac.

• TO EXPAND — The John A. Roebling's Sons Co. of Illinois announces that work is already underway for the erection of a modern office building and warehouse, located at 5525 W. Roosevelt Road, Chicago.

• ACQUISITION — The William Powell Co., valve manufacturers, has acquired the No. 2 plant of the Cincinnati Steel Castings Co. for a cost of $150,000, it was reported.

"Bliss of Brooklyn" Is Moving Executive Offices to Detroit

Brooklyn

• • • **As part of an expansion** program costing $2 million, the E. W. Bliss Co., producers of stamping presses, rolling mills and can-making machinery has transferred its executive offices from Brooklyn to Detroit, according to an announcement by D. S. Harder, president.

D. S. Harder

Internationally known for over 80 yr the company will maintain its manufacturing division in the Bush Terminal section of Brooklyn, as well as its plants in Toledo, Cleveland and Salem, Ohio; Hastings, Mich.; Derby, England; and Paris, France. "The company," Mr. Harder added, "has long desired to locate its executive offices more centrally with respect to its domestic plants

Location of the offices in Detroit will be 450 Amsterdam St.

The origin of the Bliss Co.'s main offices in Brooklyn dates back to 1867 when Eliphalet W. Bliss and John Mays founded the firm in a small room on the Brooklyn waterfront, where the Brooklyn Bridge stands today. During the last two decades, several well-known manufacturing companies have been absorbed by Bliss, including Toledo Machine & Tool Co., Toledo, the Consolidated Press Co., of Hastings, Mich., the Cleveland Machine & Mfg. Co., Cleveland and Marquette Tool & Mfg. Co., Chicago.

Motor Prices Adjusted

Washington

• • • **Fractional hp electric motors** and integral electric hp motors have been added to the list of items which manufacturers may sell on an adjustable pricing basis. The OPA order covers all motors, generators and motor generators, rotary converters and dynamotors, AC and DC, and becomes effective Apr. 16.

Construction Steel...

New York

• • • **Fabricated steel awards this** week included the following:

3200 Tons, Oroville, Calif., galvanized steel towers for 230-kv Oroville-Sacramento transmission line, Central Valley Project, Spec. 1162, through Bureau of Reclamation, Denver, to Bethlehem Pacific Coast Steel Corp., San Francisco.

3000 Tons, Detroit, press girders and framing, General Motors Corp., Fisher Body Div., to American Bridge Co., Pittsburgh.

1300 Tons, Rochester, N. Y., power pit extension building No. 31, Eastman Kodak Co., to American Bridge Co., Pittsburgh.

1100 Tons, West Carrollton, Ohio, paper mill, American Envelope Co., to American Bridge Co., Pittsburgh.

800 Tons, Los Angeles, Pacific Press building, through Bechtel-McCone Corp., to Columbia Steel Co.

760 Tons, Redding, Calif., regulating gates, Keswick Dam, to American Bridge Co., Pittsburgh.

750 Tons, Chicago, train shed and warehouse, builder unknown, through John Griffith & Sons Construction Co., to American Bridge Co., Pittsburgh.

600 Tons, Louisville, Ky., warehouse No. 14 and 15, Belknap Hardware Co., to American Bridge Co., Pittsburgh.

500 Tons, Long Island City, N. Y., bulk storage bin, Pepsi Cola Co., to American Bridge Co., Pittsburgh.

500 Tons, Clarksburg, W. Va., De Sales School of Nursing, Southeast Construction Co., to American Bridge Co., Pittsburgh.

400 Tons, Tidal, Pa., Mahoning Creek bridge, Pittsburgh & Shawmut RR Co., to American Bridge Co., Pittsburgh.

392 Tons, Redding, Calif., four gate hoists for spillway at Keswick Dam, Central Valley Project, Bureau of Reclamation, Denver, to Western Machinery Corp., Portland.

341 Tons, Los Angeles, Nicholson Ave. overhead crossing, Terminal Island Freeway, through Oberg Bros. to Columbia Steel Co.

312 Tons, Ellensburg, Mead, Ampere and Covington, Wash., substations, Bonneville Power Administration, to Railway & Industrial Engineering Co., Greensburg, Pa.

300 Tons, New York, warehouse, Walnut Ave. Realty Co., to American Bridge Co., Pittsburgh.

225 Tons, Centropolis, Mo., bridges 4 and 4A, Missouri & Pacific RR Co., to American Bridge Co., Pittsburgh.

225 Tons, Philadelphia, plant addition, Irwin & Leighton, to American Bridge Co., Pittsburgh.

200 Tons, Kelso, Wash., three separation structures on P.S.H. No. 1, through MacRae Bros., to Columbia Steel Co.

176 Tons, San Francisco, superstructure for shop 411, Naval Shipyards, Hunters Point, through Jas. I. Barnes Construction Co., to Moore Drydock Co.

130 Tons, Detroit, Great Lakes Engineering Co., addition to machine shop, to Whitehead & Kales Co.

100 Tons, Springfield, Mass., three units for Monsanto Chemical Co., to Belmont Iron Works.

100 Tons, Flagstaff, Ariz., Flagstaff-Winslow Highway, through Tanner Construction Co., to Allison Steel Co., Phoenix.

• • • **Fabricated steel inquiries** this week included the following:

2300 Tons, Lambert Point, Va., Norfolk & Western Ry Co., pier and warehouse.

2000 Tons, Cartersville, Ga., construction trestle.

850 Tons, Penobscot bridge for State of Maine.

836 Tons, Long Beach, Calif., transit shed, Pier A, Outer Harbor, Port Manager, Long Beach Harbor Dept. Spec. HD-21, bids due May 7.

600 Tons, Odair, coaster gates, Grand Coulee Dam, bids to Bureau of Reclamation.

460 Tons, Lompoc, Calif., Johns-Manville Co., factory addition, Robert E. McKee, Los Angeles, general contractor.

450 Tons, Sheldon, Vt., state bridge.

450 Tons, Union, N. J., manufacturing building, Penford Realty Co.

445 Tons, Kankakee, Ill., Gaines Food Co., manufacturing building.

410 Tons, Hillside, N. J., Ceco Steel Products Corp., factory building.

400 Tons, Pontiac, Mich., Pontiac Motor Co., addition to plant No. 6.

350 Tons, Guymon, Okla., highway bridges.

335 Tons, Green River, Utah, highway bridge.

335 Tons, Cherokee, Iowa, Illinois Central System railway bridge.

225 Tons, Marianna, Ark., State Highway bridge.

130 Tons, Northboro, Mass., inverted pipe siphon for Metropolitan District Commission.

120 Tons, Detroit, new theater of Lincoln Park Theater Co.

• • • **Reinforcing bar** awards this week included the following:

1312 Tons, Los Angeles, channel improvements, Specification 149, through Guy F. Atkinson Co., to Bethlehem Pacific Coast Steel Corp., San Francisco.

950 Tons, Los Angeles, channel improvements, Specification 148, through E. B. Bishop, to Bethlehem Pacific Coast Steel Corp., San Francisco.

900 Tons, San Francisco, shop 411, Naval Shipyards, Hunters Point, through Jas. I. Barnes Const. Co., to Herrick Iron Works.

600 Tons, Lincoln, R. I., grandstand and clubhouse, to Carnegie-Illinois Steel Corp., Pittsburgh.

297 Tons, Kelso, Wash., three separation structures on P.S.H. No. 1, through MacRae Bros., to Soule Steel Co.

200 Tons, Flagstaff, Ariz., Flagstaff-Winslow Highway, through Tanner Construction Co., to Truscon Steel Co., Los Angeles.

150 Tons, Los Angeles, Santa Ana parkway overhead crossings and retaining walls, through Contr. Engineers, Inc., to Blue Diamond Corp.

128 Tons, Chicago, Ravenswood Hospital, to Ceco Steel Products Corp.

125 Tons, Pittsburgh, McKnight Bridge, to Lind Co.

• • • **Reinforcing bar** inquiries this week included the following:

1500 Tons, Huron, Ohio, Eastern Co-op Mill Assn.

836 Tons, Friant, Calif., miscellaneous bars, Inv. A-48,776-A Bureau of Reclamation, Denver, bids due Apr. 23.

490 Tons, Cairo, Ill., flood wall.

400 Tons, Mountain Home, Ida., miscellaneous bars, Inv. 22,690-A Bureau of Reclamation, Denver, bids due Apr. 24.

342 Tons, San Francisco, concrete headwall for Mission Rock Terminal, Board of State Harbor Commissioners, San Francisco, bids in.

292 Tons, Delaware County, Pa., bridge and paving.

278 Tons, Odair, Wash., miscellaneous bars, Inv. G-38,018-A, Bureau of Reclamation, Denver, bids due Apr. 24.

275 Tons, Storm Lake, Iowa, Kingam & Co., plant.

200 Tons, Hamtramck, Mich., Bull Dog Electric Products Co., building.

200 Tons, Hillsdale, Mich., grain elevator.

200 Tons, San Bernardino County, Calif., bridge across City Creek, California Div. of Highways, Los Angeles, bids due May 9.

180 Tons, Odair, Wash., miscellaneous bars, Inv. G-38,012-A, Bureau of Reclamation, Denver, bids due Apr. 19.

168 Tons, Monroe County, Pa., bridges and paving.

145 Tons, Muskingum County, Ohio, bridges and paving.

145 Tons, Elgin, Ill., state hospital.

138 Tons, Orange County, Calif., San Juan Creek bridge, California Div. of Highways, bids due May 9.

130 Tons, Winthrop, Mass., sea wall.

• • • **Plate awards** this week included the following:

3450 Tons, American Fork, Utah, Salt Lake Aqueduct, Provo River Project, Spec. 1129, through Utah Construction Co., to Geneva Steel Co.

• • • **Plate inquiries** this week included the following:

200 Tons, Groton, Conn., standpipe.

Ordnance Plants for Sale

Washington

• • • **WAA has** announced that the first five of 24 ordnance plants are now up for sale or lease, in whole or in part. They are the U. S. Rubber Co., Des Moines; Stewart-Warner Corp., Dixon, Ill.; Remington-Rand, Inc., Illiopolis, Ill.; General Chemical Meadville Corp., Geneva, Pa.; and Trojan Powder Co., Sandusky, Ill.

Other plants for sale or lease include the following: Shofner Iron & Steel Works foundry, Portland, Ore.; Silica Products silicas plant, Eugene, Ore.; and the Columbia Steel Castings Co., ship frames (steel) plant, Portland, Ore.; Steel Foundry, Pittsburgh, Calif., operated by Columbia Steel Co.

General information may be obtained from the War Assets Administration, Washington.

Powder Metal Producer

New York

• • • **Charles Hardy, Inc.,** and the Hardy Metallurgical Co. have been merged into a single organization which will operate under the name of Charles Hardy, Inc., a Delaware corporation.

The officers of the new corporation are as follows: John D. Dale, president, F. H. Mulligan, vice-president, sales, J. J. Cordiano, vice-president, research and development, Samuel V. D. Kilbourn, secretary, E. E. Lejeune, treasurer, Charles J. Hardy, assistant treasurer.

Harold C. Miller has been appointed to the staff to take charge of research and development in powder metallurgy as applied to the electronic industry, and is actively engaged in development work on ferromagnetic powders.

MACHINE TOOLS

. . . News and Market Activities

Price Action Confounds Tool Industry

• • • **OPA's suspension** of price controls on a number of machinery and equipment items, effective Apr. 8, is regarded by some segments of the machine tool industry as the most baffling bureaucratic riddle of the week, and an enigma which lends considerable emphasis to the momentarily expected but as yet purely promissory status of the projected 20 pct price increase for other machine tools.

In broadest terms, OPA's move suggests that machine tools in high demand were never seriously considered for de-control, and that OPA has apparently scanned War Assets Administration lists to determine which machine tools are in short supply in the surplus. However, several inconsistencies, chief among which are turret lathes, negate to some extent this line of reasoning. In any event, relief afforded the industry thus far is apparent rather than actual.

With no alternative other than to wait and see what happens next, some observers, possibly reflecting the sheer irritation of waiting, among other things, allege that a wide rift in opinion on the machine tool price situation has long existed and still exists within OPA itself.

When machine tool prices are given the 20 pct injection upward, it is not unlikely that a considerable divergence of application will result among the various producers. Some, because of the 1941 price freeze, will doubtless take full measure, but generally the competitive situation will be a functional deterrent. It is well known that many contracts are carrying escalator clauses, but of a sort of open-end variety, and it is thought that many builders will prefer to requote on new inquiries rather than make the price increases retroactive on existing orders, according to some sources.

In Cincinnati, one machine tool builder has already indicated that OPA authorization of a 20 pct price increase would probably bring forth an increase on his part closer to 10 or 15 pct. This producer held that any increase above 15 pct by a company was somewhat questionable.

In Boston, some builders are not quite sure what price adjustment will ultimately be allowed, 20 pct projections to the contrary, but they are reasonably sure that such increases will be made on those machines for which there is comparatively little peacetime demand. Any flat increase, according to these sources, might hurt rather than improve the machine tool business, obviously because on such an advance some prospective buyers might back off.

It is interesting to note that OPA's announcement has in some instances rekindled buyers' interest in new tools. Whether this interest will result in actual sales remains to be seen, but at least the current price hubbub has served to focus new attention on a machine tool market that is only fairly active.

In the Detroit area, ordering is just about the same as it has been for the past couple of months, definitely down from earlier levels due to the general decision to forego 1947 models by the automobile people, thus leaving more time for each company to plan on tooling for the vehicles it will introduce next spring. Inquiries are out for the next Chevrolet light car div. at Cleveland and ordering probably will begin soon. A good estimate of machine tools and presses required on this job would be around 25 million.

Presses continue to be the big bottleneck in delivery of equipment in the Detroit area. Big press makers are now booked up around 18 months ahead and, in addition, they are somewhere between four to six months behind promises on current deliveries. The press situation is getting worse and with the effect of the steel strike, bearing strike, and electric motor strike, delivery promises are lengthening. Strikes in the press plants themselves have also impaired deliveries.

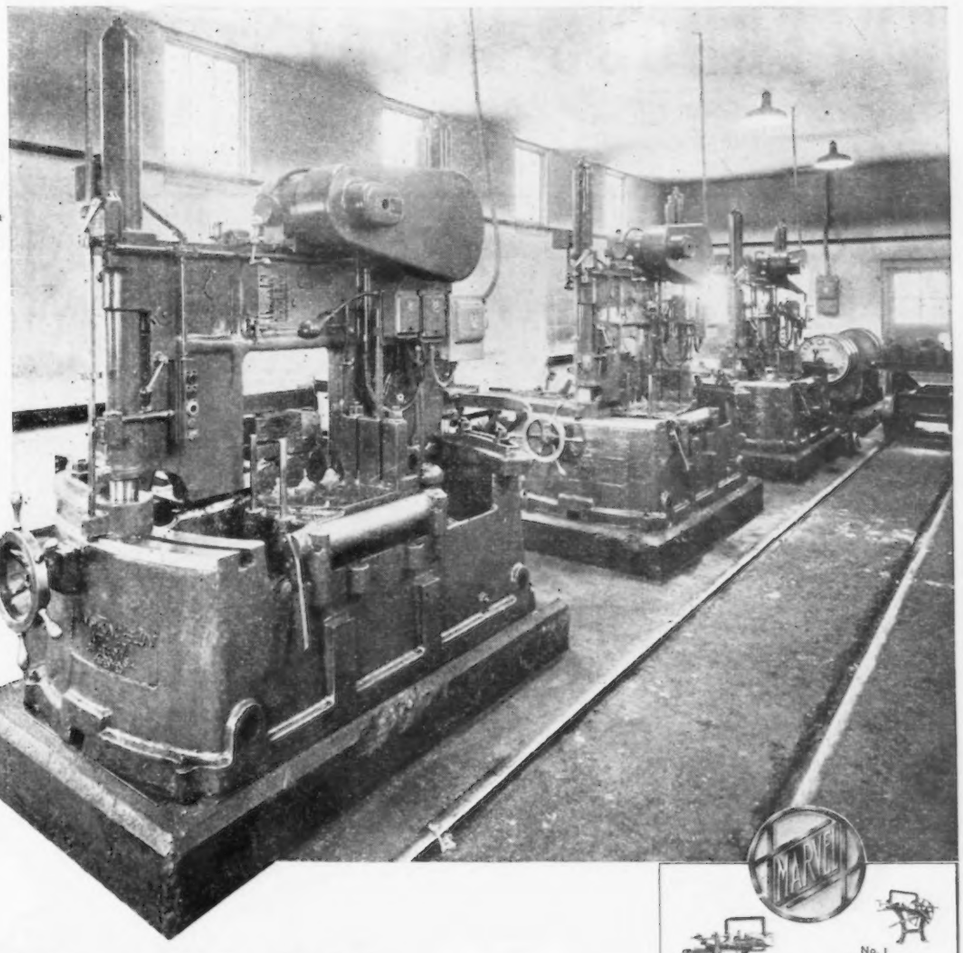
For the present, deliveries of standard general purpose machine tools are not a prime worry of the automobile companies. According to sources in the trade, Detroit is understood to be next on the list for investigation by the Washington WAA Compliance and Enforcement Division on surplus machine tool sales.

WAA is having tough sledding in implementing its announced policy of establishing and carrying out uniform procedures in regional offices on dealer sales of surplus tools. Biggest stumbling block is still the personal equation, with officials who originally opposed or were lukewarm to active dealer participation interpreting regulations in a light unfavorable to the dealers. Lack of help familiar with machine tools continues to be a barrier in listing tools for sale and speeding sales procedures.

In Detroit, it is reported that out of 66,000 items in government warehouses in that area available for sale, less than 10 pct have been priced and tagged. In almost all WAA regions, processing of declarations is still slow and dealers have asked a speed-up in determining negotiated sale prices and in credit clearances. Lack of file data on equipment available both in individual warehouses and in cross-filing within districts is hampering both WAA sales and dealer sales. A minor gripe is failure to remove file data on equipment which is sold.

Chicago continued to lead the country on dealer sales when War Assets Corp. closed its books Mar. 24 and turned the surplus disposal task over to WAA. Detroit was only slightly behind, followed by Cleveland, New York, Boston and Philadelphia. Acquisition cost on tools sold by dealers through the Chicago office at that time was about $4,800,000.

Failure to include in the original dealer licensing regulation a period during which former government employees could not be licensed continues to haunt sales activities. Former government employees, who by virtue of their previous employment knew the location of tools in heavy demand and who through former associations were able to ascertain dates upon which these tools would be made available for sale, have in at least one instance been reported leading the pack on sales.



3 MARVEL #18 Hydraulic Hack Saws at the Babcock & Wilcox Tube Co., Beaver Falls, Pa.

EASILY CUT-OFF TOUGHEST STEELS

Steels just don't come too tough for MARVEL Giant Hydraulic Hack Saws. Take, for example, the three No. 18 MARVEL Saws, at the Babcock & Wilcox steel mill, shown above. These machines are used to cut test specimens from sample pieces of stainless and other tough alloy billets which are checked for seams, pipes, etc., before being drawn into tubing. It takes tough steel to make the best tubing, and it takes modern sawing equipment to cut it rapidly, accurately and economically.

With 10 types of metal-cutting saws, each available in a series of variations, MARVEL can furnish sawing machines that exactly meet your requirements. If you have a metal-sawing problem—call in the local MARVEL Sawing Engineer.

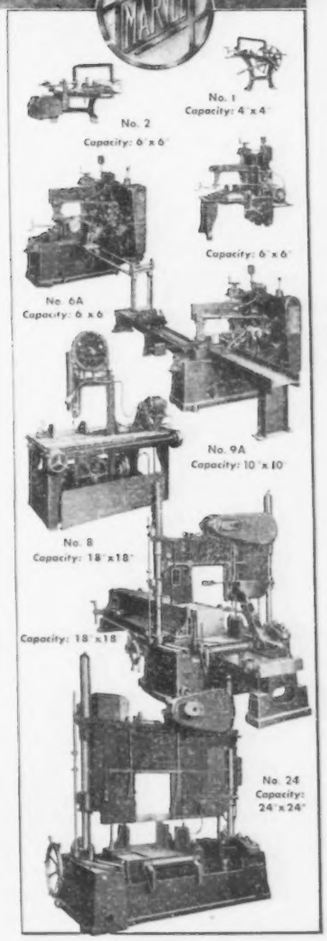
Write for MARVEL Catalog or check it in your Sweet's Catalog Files

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 Bloomingdale Ave. Chicago 39, U. S. A.

***Eastern Sales Office:* 225 Lafayette St., New York 12, N. Y.**



NONFERROUS METALS

. . . News and Market Activities

Brass Mills Produce with New Contracts

Waterbury

• • • **All brass mills** here, except the American Brass Co., have concluded wage and hour agreements with the International Union of Mine, Mill & Smelter Workers-CIO and are now in production. The American Brass Co., one of the first mills to be struck on Feb. 4, while having already agreed to the payment of 18½¢ per hr increase required by the union, is still negotiating on the questions of seniority, grievance procedure and arbitration methods. American Brass has always been among the first to offer concessions to its workers, both of a monetary nature and those designed to improve working conditions. However, the company is reported to be unwilling to permit the use of company time for the activities of union organizers.

The Connecticut Valley has suffered a wage loss approximating $4 million to date in the brass mill strike and since the industry is basic to the economy, it has been severely felt. Those familiar with the situation consider that union executives erred in calling this strike before the establishment of the pattern by the steel industry agreement.

Backlogs for brass mill products of all kinds except large diameter tubing represent months and months of production. The only cloud on the industry's horizon at this time is the continuing shutdown of domestic copper mine production, principally Kennecott's Utah Mine and Anaconda's Butte mine which together represent well above 50 pct of domestic production. The industry recognizes that government stockpiled copper would be exhausted after a few months' domestic consumption so it is necessary that an early adjustment of the mine strikes be made.

It is believed here that the McFarland Bill for increasing the ceiling price paid for nonferrous metals will pass Congress due to extreme pressure being applied by western mine producers. The shortcoming of the Premium Payment Plan in the eyes of western low-cost mine producers is that it is of benefit only to marginal producers. In some instances the economy of a whole state is dependent on the profit, if any, from its mining communities.

Informed observers consider that the strike at the American Brass Co. is not likely to be concluded until government officials take action on the company's request for an increase in the price of brass mill products.

•

Pig Tin Quotas Will Stay at Present Level

Washington

• • • **Pig tin quota** for processors for the second quarter will remain virtually the same as for the first quarter since no appreciable increase in tin production is yet in sight for the period, according to CPA.

Availability was expected to be greater than for the first quarter, however, because of work stoppages and other interruptions which prevented full use of first quarter quotas and resulted in carry-overs. Under an amendment to M-43, those having such quotas must file reports showing the unused quantity left from the first quarter and this amount may be used in addition to second quarter quotas.

Changes in the amended M-43, other than changing the base period for most items from the second quarter 1945 to the corresponding 1944 quarter, were principally in permitted uses. Major changes included:

In Schedule I—Unlimited percentage in tin content now permitted for manufacture of tubes for medicinals, biologicals, etc.; pig tin quotas for this use increased from 125 to 150 pct of corresponding 1944 quarter.

In Schedule II and VI—Terne metal may now be made from either pig or secondary tin with tin for this use included in solder quotas which have been increased from 135 to 140 pct. Also, the 50 pct tin content heretofore permitted for soldering stainless steel has been reduced to 35 pct.

Additional certification has been ordered requiring suppliers and distributors of tinplate and terneplate to sell only to buyers having an end use permitted by the order.

•

Zinc Prices Changed

Washington

• • • **A new schedule** of special packing and loading charges which may be added to ceiling prices for primary slab zinc was announced by OPA. The new charges stated in cents per ton become effective Apr. 17 and are as follows: For slab zinc wired or strapped, 30¢; for slab zinc wired or strapped on wooden pallets, 50¢; for slab zinc wired or strapped on steel pallets, 70¢.

Previously, a charge of 2¢ per ton could be made for primary slab zinc wired or strapped, compared with the new 30¢ charge now provided. This charge and those for slab zinc wired or strapped on wooden or steel pallets are in line with those established under other regulations, OPA said.

•

Ferroalloy Price Down

New York

• • • **The price of low-carbon** ferromanganese has been reduced effective Apr. 1, it has been announced by Electro Metallurgical Sales Corp., a unit of Union Carbide & Carbon Corp.

The price for the special grade, a typical composition of which is 90 pct manganese, 0.06 pct phosphorus, and a maximum 0.10 pct carbon, has been reduced from 23¢ to 21¢ per lb of contained manganese. New prices for regular grades, which analyze 80 to 85 pct manganese, will range from 20.5¢ (0.10 pct carbon) to 19¢ (0.50 pct carbon). These prices are for carload lots, in bulk, of lump size material in the eastern zone, with corresponding price reductions effective for other zones.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, del'd (Min. 10,000 lb)	15.00
Aluminum pig	14.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb. contained Be	$14.75
Beryllium aluminum, 5% Be; dollars per lb. contained Be	$30.00
Cadmium, del'd	90.00
Cobalt, 97-99% (per lb)	$1.50 to $1.57
Copper, electro, Conn. valley	12.00
Copper, electro, New York	11.75
Copper, lake	12.00
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$ 2.25
Iridium, dollars per troy oz.	$90-$100
Lead, St. Louis	6.35
Lead, New York	6.50
Magnesium, 99.9 + %, carlots	20.50
Magnesium, 12-in. sticks, carlots	27.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$105 to $109
Nickel, electro	35.00
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per oz.	$35.00
Silver, New York, cents per oz.	70.75
Tin, Straits, New York	52.00
Zinc, East St. Louis	8.25
Zinc, New York	8.65
Zirconium copper, 6 pct Zr, per lb contained Zr	6.00

Remelted Metals

(Cents per lb)

Aluminum, No. 12 Fdy. (No. 2)	10.00 to 10.50
Aluminum, deoxidizing No. 2, 3, 4	8.25 to 10.50
Brass ingot	
85-5-5-5 (No. 115)	13.25
88-10-2 (No. 315)	16.75
80-10-10 (No. 305)	16.00
No. 1 Yellow (No. 405)	10.25

Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded Shapes	Rods	Sheets
Copper	20.87	....	20.87
Copper, H.R.	....	17.37	....
Copper drawn	....	18.37	....
Low brass, 80%	....	20.40	20.15
High brass	....	....	19.48
Red brass, 85%	....	20.61	20.36
Naval brass	20.37	19.12	24.50
Brass, free cut	....	15.01	....
Commercial bronze, 90%	....	21.32	21.07
Commercial bronze, 95%	....	21.53	21.28
Manganese bronze	24.00	....	28.00
Phos. bronze, A, B, 5%	....	36.50	36.25
Muntz metal	20.12	18.87	22.75
Everdur, Herculoy, Olympic or equal	....	25.50	26.00
Nickel silver, 5%	....	28.75	26.50
Architect bronze	19.12	....	....

Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Tubing: 2 in. OD by 0.065 in. wall: 2S-½H, 40¢; 52S-O, 61¢; 24S-T, 67.5¢; base, 2000 to 4999 lb.

Plate: ¼ in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 22.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 29.5¢; base, 30,000 lb and over.

Flat Sheet: 0.136 in. thickness: 2S, 3S, 22.7¢; 52S, 26.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 31.7¢; base, 30,000 lb and over.

Extruded Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 2S, 3S, 25.5¢; 17S, 31¢; 24S, 34¢; 53S, 28¢; 61S, 28.5¢; 63S, 26.5¢; 75S, 39¢; base 2000 to 5000 lb.

Wire, Rod and Bar—screw machine stock, rounds, 11S-T3, 17S-T, ¼ in., 28.5¢; ½ in., 26¢; 1 in., 24.5¢; 2 in., 23¢; hexagons, ¼ in., 34.5¢; ½ in., 28.5¢; 1 in., 2 in., 25.5¢; base 5000 lb. *Rod:* 2S, 3S, 1¼ to 2½ in. diam., rolled, 23.5¢; cold-finished, 24¢; base 30,000 lb. *Round Wire:* drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 37.5¢; B & S gage 23: 2S, 3S, 41.5¢; 56S, 44.5¢; 10,000 lb base; B & S gage 00-1: 2S, 3S, 21¢; 56S, 29¢; B & S 15-16: 2S, 3S, 32.5¢; 56S, 36.5¢; base 30,000 lb.

Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb. or more, 46c. a lb.; 25 to 90 lb., 56c.; less than 25 lb., 66c.

NONFERROUS SCRAP METAL QUOTATIONS

†(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

Copper, Copper Base Alloys

OPA Group 1†

No. 1 wire, No. 1 heavy copper	9.75
No. 1 tinned copper wire, No. 1 tinned heavy copper	9.75
No. 2 wire, mixed heavy copper	8.75
Copper tuyeres	8.75
Light copper	7.75
Copper borings	9.75
No. 2 copper borings	8.75
Lead covered copper wire, cable	6.00*
Lead covered telephone, power cable	6.04
Insulated copper	3.00*

OPA Group 2†

Bell metal	15.50
High grade bronze gears	13.25
High grade bronze solids	11.50*
Low lead bronze borings	11.50*
Babbitt lined brass bushings	13.00
High lead bronze solids	10.00*
High lead bronze borings	10.00*
Red trolley wheels	10.75
Tinny (phosphor bronze) borings	10.50
Tinny (phosphor bronze) solids	10.50
Copper-nickel solids and borings	9.25
Bronze paper mill wire cloth	9.50
Aluminum bronze solids	9.00
Soft red brass (No. 1 composition)	9.00
Soft red brass borings (No. 1)	9.00
Gilding metal turnings	8.50
Contaminated gilded metal solids	8.00
Unlined standard red car boxes	8.25
Lined standard red car boxes	7.75
Cocks and faucets	7.75
Mixed brass screens	7.75
Red brass breakage	7.50
Old nickel silver solids, borings	6.25
Copper lead solids, borings	6.25
Yellow brass castings	6.00
Automobile radiators	7.25
Zincy bronze borings	7.00
Zincy bronze solids	8.00

OPA Group 3

Fired rifle shells	8.00
Brass pipe	7.25
Old rolled brass	6.75
Admiralty condenser tubes	7.25
Muntz metal condenser tubes	6.75
Plated brass sheet, pipe reflectors	6.25
Manganese bronze solids	5.50[1]
Manganese bronze solids	4.50[2]
Manganese bronze borings	4.00[1]

OPA Group 4

Refinery brass	4.50*

*Price varies with analysis. [1] Lead content 0.00 to 0.40 pct. [2] Lead content 0.41 to 1.00 pct.

Brass Mill Scrap†

Briquetted cartridge brass turnings	8.625
Cartridge brass turnings, loose	7.875
Loose yellow brass trimmings	7.375

Aluminum*

Plant scrap, segregated

2S solids	8.50 to 9.00
Dural alloys, solids 14, 17, 18, 24S, 25S	5.00 to 5.50
turnings, dry basis	3.50 to 4.00
Low copper alloys 51, 52, 61, 63S solids	7.00 to 8.00
turnings, dry basis	5.00 to 6.50

Plant scrap, mixed

Solids	5.25
Turnings, dry basis	4.00

Obsolete scrap

Pure cable	8.00
Old sheet and utensils	7.50
Old castings and forgings	6.00
Pistons, free of struts	5.00
Pistons, with struts	4.50
Old alloy sheet	3.00 to 4.00

Magnesium*

Segregated plant scrap

Pure solids and all other solids, exempt	
Borings and turnings	1.50

Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings	2.00
Grade 2 solids	2.00
Grade 2 borings and turnings	1.00

*Nominal.

Zinc

New zinc clippings, trimmings	6.50
Engravers, lithographers plates	6.50
Old zinc scrap	4.75
Unsweated zinc dross	5.00
Die cast slab	4.50
New die cast scrap	4.45
Radiator grilles, old and new	3.50
Old die cast scrap	3.00

Lead

Deduct 0.55c. a lb. from refined metal basing point prices or soft and hard lead including cable, for f.o.b. point of shipment price.

Nickel

Ni content 98+%, Cu under ½%, 23¢ per lb.; 90 to 98% Ni, 23¢ per lb. contained Ni.

ELECTROPLATING ANODES AND CHEMICALS

Anodes

(Cents per lb., f.o.b. shipping point in 500 lb. lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	25⅛
Electrodeposited	18¾
Rolled, oval, straight	19¾
Curved	20¾
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	23¾
Zinc, cast, 99.99, 15 in or longer	16¼
Nickel, 99 pct plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver 999 fine	
Rolled, 100 oz. lots, per oz.	80¾

Chemicals

(Cents per lb., f.o.b. shipping point)

Copper cyanide, 1-5 bbls.	34.00
Copper sulphate, 99.5, crystals, bbls.	7.75
Nickel salts, single, 425 lb. bbls., frt. allowed	13.50
Silver Cyanide, 100 oz. lots, per oz.	0.655
Sodium cyanide, 96 pct, domestic, 100 lb. drums	15.00
Zinc cyanide, 100 lb. drums	33.00
Zinc sulphate, 89 pct, crystals, bbls., frt. allowed	6.35

SCRAP

Scrap Prices Will Not Be Increased

Washington

• • • There will be no increase in scrap prices in the foreseeable future.

Announcement to this effect was made on Apr. 12 by Warren Huff, Chief of the OPA Metals Branch. Emphasizing that current ceilings are adequate, Mr. Huff said that members of the Industrial Advisory Committee for Iron and Steel Scrap at a meeting in New York on Apr. 5 agreed unanimously that no increase in present maximum prices is wanted or justified. The Committee is made up of consumers, dealers and brokers.

"We in OPA agree with the Committee that no price increase is justified and want to deny emphatically reports that any is contemplated," said Mr. Huff.

It was disclosed that the committee also agreed that there should be no change in the $3.50 scrap preparation charge and that OPA strongly supports this view.

Committee members and OPA officials in opposing higher ceilings agree, it was stated, that supplies of iron and steel scrap, which are seriously short, should increase steadily during the next few months.

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PITTSBURGH—A better flow of scrap has been noticeable in this area during the past fortnight, probably accounted for by better industrial flow and better local collections. Regardless of the means, shipments have been up somewhat and there are not critical points from the standpoint of shortages. While indications have been that shortages have been critical since the turn of the year, it was just a matter of time until production scrap began to flow more freely and relieve those shortages. It appears now that, despite the Sunday morning quarterbacking, the shortages early in the year were not so severe as might have been indicated at the time.

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CHICAGO—Little improvement is noted in availability of production scrap, presenting the principal barrier to a step-up in shipments. Supply continues to be the governing factor, with all openhearth grades commanding whatever springboard is necessary to assure delivery. Little relief from the drain on mill inventories has yet developed as a result of the coal strike, only one big scrap consumer has made a modest cut in operations so far.

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PHILADELPHIA—Shipments of scrap from this area continue high with the greatest shortage existing in cast grades, and foundries willing to accept shipments at high springboards. All mills continue to accept shipments despite the effect of the coal strike, however it is considered that a continuation of the strike must eventually disrupt the normal flow. Mills and foundries are taking scrap except one of the latter where nevertheless the strike has been concluded. Shipments of low phos are going to the Pittsburgh area from Philadelphia at ceiling plus transportation costs.

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DETROIT—No change has developed in the scrap market here. Demand continues heavy, well ahead of supply, and prices remain firm at ceiling. Some scrap is now beginning to flow out of the reopened General Motors plants, but as yet it has not assumed volume sufficient to become a factor of note in the market.

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BOSTON—Mills continue to pay premiums of $1.50 a ton or more for materials that ordinarily would go to foundries, and the latter are begging for scrap as a result. No foundry has closed because of a lack of scrap, but some have slackened operations as a precaution. Trucks are difficult to get, thus delaying deliveries to foundries. Open tonnages of steel for the week included 750 tons unprepared offered by the Portsmouth Navy yard, bids for which closed Apr. 16, and 575 tons of alloy forgings at Bethlehem's Quincy yard, bids for which close Apr. 19.

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NEW YORK—The scrap situation in this area remains unchanged this week. Movement is only fair, with demand continuing far ahead of the meager supplies that are available to the consumer. Although most dealers have not yet suffered as a result of the coal strike, fingers are crossed. Cast grades continue to hold top spot so far as criticalness is concerned.

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BUFFALO—A falling-off in volume of production scrap at a time when steelmakers of the district are operating at capacity has further tightened the local market. Adding to complications, pig iron output has been curtailed by the shutting-down of a Hanna blast furnace for repairs. This stack is not expected to resume until the coal strike is settled. On the other hand there has been a moderate increase in the supply of cast scrap, mostly from plants junking obsolescent machinery. The season's first canal shipment of openhearth scrap are enroute from New York and should arrive late this week or early next week. OPA's announcement that no increase in scrap ceilings would be granted came as no surprise. One leading dealer declared he could foresee no upward revision "until mills are forced to shut down for lack of scrap."

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CINCINNATI—Dealers and brokers indicate that the scrap iron and steel market continues to be extremely tight, with no relief in sight. Demand for all the better grades of scrap continues to exceed supply, and dealers are at wits end to keep melters supplied, and have resorted to truck, and partial truck loads, in order to spread the scrap material available. Prices continue at ceiling, with some reports of melters paying additional freight rates to attract material from remote districts.

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CLEVELAND—While the coal strike has increased demand for scrap, shipments to mills and to other consumers have fallen off and are only fair at best, due to a scrap supply situation which is rapidly tightening down to nothing. Production scrap has been very slow in coming out, and with prices firm at ceiling, the market here is comparatively unchanged.

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BIRMINGHAM—Supply of scrap is failing to keep pace with demand despite reduced mill operations occasioned by the coal strike. Cast grades in limited quantities are coming in from Kentucky and Tennessee but practically none is coming out from sources within the district.

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ST. LOUIS—The movement of scrap iron to the St. Louis industrial area continues to show improvement with warmer weather prevailing in the area. Granite City Steel Co. whose employees have been on strike, have accumulated several hundred cars of material, and further shipments are being delayed. Cast iron and stove plate are in special demand. Prices are unchanged.

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TORONTO—Serious shortage of scrap iron and steel which is hampering Canadian steel mill and foundry operations, has resulted in an appeal to the people of Canada from Reconstruction Minister Howe, to lend a hand toward providing more scrap. Mr. Howe stated: "An acute shortage of scrap steel and iron is hampering Canada's reconversion program, retarding the return of a high standard of peactime living for Canadian people. To procure this valuable scrap metal, we must have the cooperation of every individual. I realize that the patriotic salvage organizations that functioned during the war years now have disbanded, but a telephone call to a scrap metal dealer, who will direct this scrap back to the usual commercial channels, is all that is required to assist in building up our scrap stockpiles. The need for scrap is doubly imperative at this time as, coupled with the stepping up of production to fill reconversion needs, we are unable to depend upon our United States imports."

Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages. Where asterisks are used on quotations below, this indicates a ceiling price to which must be added brokerage fee and adjusted freight.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bdld. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
Hvy. break cast.	16.50*
No. 1 cupola	20.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Rolled steel wheels	24.50*
Low phos. bil. crops	25.00*
Low phos.	22.50*
RR. malleable	22.00*

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels, turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy. forge	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Angles & splice bars	22.25*
Locomotive tires, cut	24.25*
Cut bolsters & side frames	22.25*
Standard stl. car axles	25.75*
No. 3 steel wheels	23.25*
Couplers & knuckles	23.25*
Agricul. malleable	22.00*
RR. malleable	22.00*
No. 1 mach. cast.	20.00*
Rails 3 ft. and under	22.25*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Clean auto cast.	20.00*
Cast iron carwheels	20.00*

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	20.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Scrap rails	21.00*

BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

No. 1 hvy. melting	$15.05*
No. 2 hvy. melting	15.05*
No. 1 and 2 bundles	15.05*
Busheling	15.05*
Turnings, shovelings	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast, chem. bor.	$13.06 to 14.15*

Truck delivery to foundry

Machinery cast.	21.00 to 23.51*
Breakable cast	21.57 to 21.87*
Stove plate	20.00 to 23.51*

DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New busheling	17.32*
Flashings	17.32*
Mach. shop turn.	12.32*
Short shov. turn.	14.32*
Cast iron borings	13.32*
Mixed bor. & turn.	12.32*
Low phos. plate	19.82*
No. 1 cupola cast.	20.00*
Charging box cast.	19.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Automotive cast	20.00*

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	14.75*
Mixed bor. & turn.	13.75*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Cast, charging box	19.00*
Hvy. axle forge turn.	18.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
Billet crops	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

ST. LOUIS

Per gross ton delivered to consumer:

Heavy melting	$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut.	$18.50 to 19.00
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	19.00*
Grate bars	15.25*
Brake shoes	15.25*
RR. malleable	22.00*
Cast iron carwheels	20.00*
No. 1 mach'ery cast	20.00*
Breakable cast	16.50*

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 busheling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast	20.00*
Stove plate	19.00*
Steel axles	18.50*
Scrap rails	18.50
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00
Rails 3 ft. & under	21.00*
Cast iron carwheels	17.50 to 18.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 busheling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shovel. turn.	17.00*
Cast iron borings	16.00*

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	13.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn.	12.33*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Charging box cast	19.00*
Store plate	19.00*
Clean auto cast	20.00*
Unstrip. motor blks.	17.50*
Cl'n chem. cast bor.	14.33*

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	14.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
Stove plate	19.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron car wheels	20.00*
RR. coil & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
RR. malleable	22.00*
No. 1 busheling	19.25*

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel.	16.50*
No. 1 busheling	19.50*
Steel axle turn.	19.00*
Low phos. billet and bloom crops	24.50*
Cast iron borings	15.50*
Mixed bor. & turn.	14.50*
No. 2 busheling	17.00*
No. 1 machine cast	20.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	19.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Railroad malleable	22.00*
Elec. furnace punch	22.00*

SAN FRANCISCO

Per gross ton delivered to consumer:

RR. hvy. melting	$15.00 to 15.75
No. 1 hvy. melting	15.00 to 15.75
No. 2 hvy. melting	14.00 to 14.75
No. 2 bales	13.00 to 13.75
No. 3 bales	7.50 to 8.25
Mach. shop turn.	6.50 to 7.25
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast.	19.00 to 21.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$14.50 to $15.25
No. 2 hvy. melting	13.50 to 14.25
No. 1 bales	13.50 to 14.25
No. 2 bales	12.50 to 13.25
No. 3 bales	8.00 to 9.00
Mach. shop turn.	6.00
No. 1 cupola cast.	19.00 to 21.00

SEATTLE

Per gross ton delivered to consumer:

RR. hvy. melting	$12.50
No. 1 & No. 2 hvy. melting	12.50
Elec. furn. 1 ft. und.	$14.00 to 15.00
No. 1 cupola cast.	20.00*

HAMILTON, ONT.

Per gross ton delivered to consumer:

Heavy melting	$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remelting	18.50*
Rails, rerolling	21.50*
Bushelings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

Comparison of Prices . .

[Advances over past week in Heavy Type; declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.]

Flat-Rolled Steel (cents per pound)	Apr. 16, 1946	Apr. 9, 1946	Mar. 12, 1946	Apr. 17, 1945
Hot-rolled sheets	2.425	2.425	2.425	2.20
Cold-rolled sheets	3.275	3.275	3.275	3.05
Galvanized sheets (24 ga.)	4.05	4.05	4.05	3.65
Hot-rolled strip				
6 in. and under	2.45	2.45	2.45	2.10
Over 6 in.	2.35	2.35	2.35	2.10
Cold-rolled strip	3.05	3.05	3.05	2.80
Plates	2.50	2.50	2.50	2.20
Plates, wrought iron	4.112	4.112	4.112	3.80
Stain's c-r strip (No. 302)	28.00	28.00	28.00	28.00
Tin and Terneplate: (dollars per base box)				
Tinplate, standard cokes.	$5.25	$5.25	$5.25	$5.00
Tinplate, electro (0.50 lb)	4.75	4.75	4.75	4.50
Special coated mfg. ternes	4.55	4.55	4.55	4.30
Bars and Shapes: (cents per pound)				
Merchant bars	2.50	2.50	2.50	2.15
Cold-finished bars	3.10	3.10	3.10	2.65
Alloy bars	2.808	2.808	2.808	2.70
Structural shapes	2.35	2.35	2.35	2.10
Stainless bars (No. 302)	24.00	24.00	24.00	24.00
Wrought iron bars	4.76	4.76	4.76	4.40
Wire and Wire Products: (cents per pound)				
Bright wire	3.05	3.05	3.05	2.60
Wire nails	3.25	3.25	3.25	2.80
Rails: (dollars per net ton)				
Heavy rails	$43.39	$43.39	$43.39	$43.00
Light rails	49.18	49.18	49.18	43.00
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$39.00	$39.00	$39.00	$34.00
Sheet bars	38.00	38.00	38.00	34.00
Slabs, rerolling	39.00	39.00	39.00	34.00
Forging billets	47.00	47.00	47.00	40.00
Alloy blooms, billets, slabs	56.16	56.16	56.16	54.00
Wire Rods and Skelp: (cents per pound)				
Wire rods	2.30	2.30	2.30	2.00
Skelp	2.05	2.05	2.05	1.90

Pig Iron: (per gross ton)	Apr. 16, 1946	Apr. 9, 1946	Mar. 12, 1946	Apr. 17, 1945
No. 2 foundry, Phila.	$28.34	$28.34	$27.59	$26.84
No. 2, Valley furnace	26.50	26.50	25.75	25.00
No. 2, Southern, Cin'ti.	26.94	26.94	26.19	25.44
No. 2, Birmingham	22.88	22.88	22.13	21.38
No. 2 foundry, Chicago†	26.50	26.50	25.75	25.00
Basic, del'd eastern Pa.	27.84	27.84	27.09	26.34
Basic, Valley furnace	26.00	26.00	25.25	24.50
Malleable, Chicago†	26.50	26.50	25.75	25.00
Malleable, Valley	26.50	26.50	25.75	25.00
L. S. charcoal, Chicago	42.34	42.34	42.34	42.34
Ferromanganese‡	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.
‡ For carlots at seaboard.

Scrap: (per gross ton)	Apr. 16, 1946	Apr. 9, 1946	Mar. 12, 1946	Apr. 17, 1945
Heavy melt'g steel, P'gh.	$20.00	$20.00	$20.00	$20.00
Heavy melt'g steel, Phila.	**18.75**	**18.75**	**18.75**	**18.75**
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh	20.00	20.00	20.00	20.00
No. 1 cast, Philadelphia	20.00	20.00	20.00	20.00
No. 1 cast, Chicago	20.00	20.00	20.00	20.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$7.50	$7.50	$7.50	$7.00
Foundry coke, prompt	9.00	9.00	9.00	8.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro., Conn.	12.00	12.00	12.00	12.00
Copper, Lake	12.00	12.00	12.00	12.00
Tin, Straits, New York	52.00	52.00	52.00	52.00
Zinc, East St. Louis	8.25	8.25	8.25	8.25
Lead, St. Louis	6.35	6.35	6.35	6.35
Aluminum, virgin, del'd.	15.00	15.00	15.00	15.00
Nickel, electrolytic	35.00	35.00	35.00	35.00
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	14.50	14.50	14.50	14.50

Composite Prices . .

[Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.]

	FINISHED STEEL	PIG IRON	SCRAP STEEL
April 16, 1946	2.69516¢ per lb.	$26.12 per gross ton	$19.17 per gross ton
One week ago	2.69516¢ per lb.	$26.12 per gross ton	$19.17 per gross ton
One month ago	2.69516¢ per lb.	$25.37 per gross ton	$19.17 per gross ton
One year ago	2.42471¢ per lb.	$24.61 per gross ton	$19.17 per gross ton

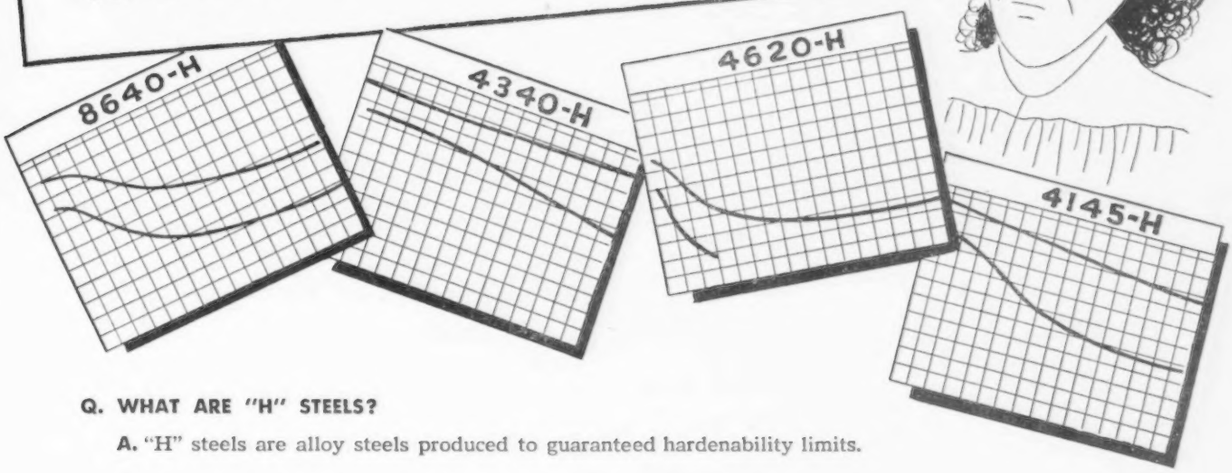
	FINISHED STEEL HIGH		FINISHED STEEL LOW		PIG IRON HIGH		PIG IRON LOW		SCRAP STEEL HIGH		SCRAP STEEL LOW	
1946	2.69516¢ Feb.	19	2.44104¢ Jan.	1	$26.12 Mar.	19	$25.37 Jan.	1	$19.17		$19.17	
1945	2.44104¢ Oct.	2	2.38444¢ Jan.	2	25.37 Oct.	23	23.61 Jan.	2	$19.17 Jan.	2	$18.92 May	22
1944	2.30837¢ Sept.	5	2.21189¢ Oct.	5	$23.61		$23.61		19.17 Jan.	11	15.76 Oct.	24
1943	2.29176¢		2.29176¢		23.61		23.61		$19.17		$19.17	
1942	2.28249¢		2.28249¢		23.61		23.61		19.17		19.17	
1941	2.43078¢		2.43078¢		$23.61 Mar.	20	$23.45 Jan.	2	$22.00 Jan.	7	$19.17 Apr.	10
1940	2.30467¢ Jan.	2	2.24107¢ Apr.	16	23.45 Dec.	23	22.61 Jan.	2	21.83 Dec.	30	16.04 Apr.	9
1939	2.35367¢ Jan.	3	2.26689¢ May	16	22.61 Sept.	19	20.61 Sept.	12	22.50 Oct.	3	14.08 May	16
1938	2.58414¢ Jan.	4	2.27207¢ Oct.	18	23.25 June	21	19.61 July	6	15.00 Nov.	22	11.00 June	7
1937	2.58414¢ Mar.	9	2.32263¢ Jan.	4	23.25 Mar.	9	20.25 Feb.	16	21.92 Mar.	30	12.67 June	9
1936	2.32263¢ Dec.	28	2.05200¢ Mar.	10	19.74 Nov.	24	18.73 Aug.	11	17.75 Dec.	21	12.67 June	8
1935	2.07642¢ Oct.	1	2.06492¢ Jan.	8	18.84 Nov.	5	17.83 May	14	13.42 Dec.	10	10.33 Apr.	29
1934	2.15367¢ Apr.	24	1.95757¢ Jan.	2	17.90 May	1	16.90 Jan.	27	13.00 Mar.	13	9.50 Sept.	25
1933	1.95578¢ Oct.	3	1.75836¢ May	2	16.90 Dec.	5	13.56 Jan.	3	12.25 Aug.	8	6.75 Jan.	3
1932	1.89196¢ July	5	1.83901¢ Mar.	1	14.81 Jan.	5	13.56 Dec.	6	8.50 Jan.	12	6.43 July	5
1931	1.99626¢ Jan.	13	1.86586¢ Dec.	29	15.90 Jan.	6	14.79 Dec.	15	11.33 Jan.	6	8.50 Dec.	29
1930	2.25488¢ Jan.	7	1.97319¢ Dec.	9	18.21 Jan.	7	15.90 Dec.	16	15.00 Feb.	18	11.25 Dec.	9
1929	2.31773¢ May	28	2.26498¢ Oct.	29	18.71 May	14	18.21 Dec.	17	17.58 Jan.	29	14.08 Dec.	8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Do You Know What the "H" means to ALLOY STEELS?



Q. WHAT ARE "H" STEELS?

A. "H" steels are alloy steels produced to guaranteed hardenability limits.

Q. HOW DO "H" STEELS DIFFER FROM STANDARD ALLOY STEELS?

A. The ranges of hardenability guaranteed on "H" steels are *much narrower* than the ranges encountered on steels ordered to standard chemical specifications.

Q. WHAT ARE THE ADVANTAGES OF USING "H" STEELS?

A. Narrower hardenability ranges mean closer control of physical properties on finished parts.

Q. CAN CHEMICAL RANGES BE SPECIFIED ON "H" STEELS IN ADDITION TO HARDENABILITY RANGES?

A. Yes. "H" steels carry chemical ranges which are slightly wider than the standard chemical ranges. Therefore, "H" steels give you full assurance that the desired type of steel will be obtained.

Q. WHAT IS THE EXTRA COST OF SPECIFYING "H" STEELS?

A. None. "H" steels may be purchased at the same price as standard steels ordered to chemical ranges only.

Q. WHO IS THE LARGEST PRODUCER OF "H" STEELS?

A. The Wisconsin Steel Company has produced the great majority of "H" heats made up to the present time.

Take advantage of Wisconsin's facilities for the production of "H" alloy steels. They're made to Wisconsin's exacting standards under the supervision of top-flight metallurgists. Order steels to your *hardenability requirements* and be assured of closer controlled physical properties in your finished product. Contact our sales and metallurgical staffs and let them give you complete facts on "H" alloy steels—steels that are made to your *requirements*.

WISCONSIN STEEL COMPANY

(Affiliate of International Harvester Company)

180 North Michigan Avenue Chicago 1, Illinois

WISCONSIN "H" ALLOY STEELS

Iron and Steel Prices...

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 25¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15¢ per lb higher.

Basing Points	Pitts-burgh	Chicago	Gary	Cleve-land	Birm-ingham	Buffalo	Youngs-town	Spar-rows Point	Granite City	Middle-town, Ohio	Gulf Ports, Cars	to Pacific Ports, Cars	DELIVERED TO Detroit	New York	Phila-delphia
INGOTS															
Carbon, rerolling	($33.00 f. o. b. mill)														
Carbon, forging	$38	$38	$38	$38	$38	$38	$38								
Alloy	$46.80	$46.80				$46.80	(Bethlehem, Massillon, Canton, Coatesville=$46.80)								
BILLETS, BLOOMS, SLABS															
Carbon, rerolling	$39	$39	$39	$39	$39	$39	$39	$39	(Provo=$50.20, Duluth=$41[14])			$51[14]	$41		
Carbon, forging billets	$47	$47	$47	$47	$47	$47	$47		(Provo=$58.20, Duluth=$49[14])			$59[14]	$49		
Alloy	$56.16	$56.16				$56.16	(Bethlehem, Massillon, Canton=$56.16)						$61		
SHEET BARS	$38	$38		$38		$38	$38	$38	(Canton=$38)						
PIPE SKELP	2.05¢	2.05¢					2.05¢	2.05¢	(Coatesville=2.05¢)						
WIRE RODS [15] No. 5 to 9/32 in.	2.30¢	2.30¢		2.30¢	2.30¢	(Worcester=2.40¢)					2.55¢	2.80¢			
SHEETS															
Hot-rolled	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.525¢	2.425¢		2.975¢	2.525¢	2.665¢	2.595¢
Cold-rolled [1]	3.275¢	3.275¢	3.275¢	3.275¢		3.275¢	3.275¢		3.375¢	3.275¢		3.925¢	3.375¢	3.615¢	3.595¢
Galvanized (24 gage)	4.05¢	4.05¢	4.05¢		4.05¢	4.05¢	4.05¢	4.05¢	4.15¢	4.05¢		4.60¢		4.29¢	4.22¢
Enameling (20 gage)	3.80¢	3.80¢	3.80¢	3.80¢			3.80¢		3.90¢	3.80¢		4.45¢	3.90¢	4.16¢	4.12¢
Long ternes [2]	4.05¢	4.05¢	4.05¢									4.80¢		4.41¢	4.37¢
STRIP															
Hot-rolled [3] 6 in. and under	2.45¢	2.45¢	2.45¢	2.45¢	2.45¢		2.45¢			2.45¢		3.10¢	2.55¢	2.81¢	2.77¢
Hot-rolled [3] over 6 in.	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢		2.35¢			2.35¢		3.00¢	2.45¢	2.71¢	2.67¢
Cold-rolled [4]	3.05¢	3.15¢		3.05¢			3.05¢	(Worcester=3.25¢)					3.15¢	3.41¢	3.37¢
Cooperage stock	2.55¢	2.55¢			2.55¢		2.55¢							2.91¢	
Commodity cold-rolled	3.20¢	3.30¢		3.20¢			3.20¢	(Worcester=3.60¢)					3.30¢	3.56¢	
TINPLATE															
Standard cokes, base box	$5.25	$5.25	$5.25		$5.35			$5.35	$5.35					$5.60[11]	$5.53[11]
Electro, box 0.25 lb	$4.60	$4.60	$4.60					$4.70							
Electro, box 0.50 lb	$4.75	$4.75	$4.75					$4.85	$4.85						
Electro, box 0.75 lb	$4.90		$4.90					$5.00	$5.00						
BLACKPLATE 29 gage [5]	3.30¢	3.30¢	3.30¢					3.40¢	3.40¢			4.30¢			3.57¢
TERNES, MFG. Special coated, base box	$4.55	$4.55	$4.55					$4.65	$4.65						
BARS								(Duluth=2.60¢)							
Carbon steel	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	(Provo, Utah=3.20¢)			2.85¢	3.15¢	2.60¢	2.84¢	2.82¢
Rail steel [6]	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢					2.85¢	3.15¢			
Reinforcing (billet) [7]	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢			2.70¢	2.75¢	2.45¢	2.59¢	2.67¢
Reinforcing (rail) [7]	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢				2.70¢	2.75¢	2.45¢		2.57¢
Cold-finished [8]	3.10¢	3.10¢	3.10¢	3.10¢		3.10¢	(Detroit=3.15¢)			(Toledo=3.25¢)				3.44¢	3.42¢
Alloy, hot-rolled	2.808¢	2.808¢				2.808¢	2.808¢	(Bethlehem, Massillon, Canton=2.808¢)					2.908¢		
Alloy, cold-drawn	3.484¢	3.484¢	3.484¢	3.484¢		3.484¢							3.584¢		
PLATE								(Coatesville and Claymont=2.50¢, Provo, Utah=3.20¢)							
Carbon steel [13]	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢		2.50¢	2.50¢			2.85¢	3.05¢	2.72¢	2.69¢	2.55¢
Floor plates	3.75¢	3.75¢									4.10¢	4.40¢		4.11¢	4.07¢
Alloy	3.64¢	3.64¢			(Coatesville=3.64¢)						4.108¢	4.316¢		3.64¢	3.73¢
SHAPES Structural	2.35¢	2.35¢	2.35¢		2.35¢	2.35¢	(Bethlehem=2.35¢)				2.60¢	3.00¢		2.52¢	2.465¢
SPRING STEEL, C-R															
0.26 to 0.50 carbon	3.05¢			3.05¢			(Worcester=3.25¢)								
0.51 to 0.75 carbon	4.65¢			4.65¢			(Worcester=4.85¢)								
0.76 to 1.00 carbon	6.65¢			6.65¢			(Worcester=6.85¢)								
1.01 to 1.25 carbon	9.03¢			9.03¢			(Worcester=9.23¢)								
WIRE [9] Bright [12]	3.05¢	3.05¢		3.05¢	3.05¢		(Worcester=3.15¢)			(Duluth=3.10¢)		3.55¢			3.37¢
Galvanized	Add proper size extra and galvanizing extra to Bright Wire Base														
Spring (high carbon)	3.65¢	3.65¢		3.65¢			(Worcester=3.75¢)					4.15¢			3.97¢
PILING Steel sheet	2.65¢	2.65¢				2.65¢						3.20¢			2.97¢

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

BASING POINT	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt.	22.99	24.67	17.01	17.47	20.69	25.29
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	22.99	24.67	17.01	17.47	20.69	25.29
Billets, P'gh, Chi, Canton, Newark, N. J., Watervliet, Syracuse, Balt	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Newark, N. J., Ft. Wayne, Titusville	22.99	24.67	17.01	17.47	20.69	25.29
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.05	25.97	20.02	20.56	24.34	29.75
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.05	25.97	20.02	20.56	24.34	29.75
Plates, P'gh, Middletown, Canton	31.38	29.21	23.28	23.80	28.67	33.00
Shapes, structural P'gh, Chi	27.05	25.97	20.02	20.56	24.34	29.75
Sheets, P'gh, Chi, Middletown, Canton, Balt.	38.95	36.79	28.67	31.38	35.16	38.49
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.43	23.28	18.39	18.93	25.97	37.87
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	32.46	30.30	23.80	24.34	34.62	56.26
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila.	27.05	25.97	20.02	20.56	24.34	29.75
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Newark, N. J., Syracuse	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton, (4 in. to 6 in.)	72.09	72.09	.....	68.49	.....	.....

SHELL STEEL

	per gross ton
8 in. to 12 in.	$52.00
12 in. to 18 in.	54.00
18 in. and over	56.00

Basic openhearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.

Prices delivered Detroit are $2.00 higher; East Michigan, $3 higher.

Price Exceptions: Follansbee Steel Corp. permitted to sell at $13.00 per gross ton, f.o.b. Toronto, Ohio, above base price of $52.00.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting, or quantity.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	per lb
Field grade	3.90¢
Armature	4.25¢
Electrical	4.75¢
Motor	5.425¢
Dynamo	6.125¢
Transformer 72	6.625¢
Transformer 65	7.625¢
Transformer 58	8.125¢
Transformer 52	8.925¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb	
No. 1 O.H., net ton	$43.39
Angle splice bars, 100 lb	2.85
(F.o.b. basing points)	*per net ton*
Light rails (from billets)	$49.18
Light rails (from rail steel)	48.29
	base per lb
Cut spikes	3.65¢
Screw spikes	5.55¢
Tie plate, steel	2.55¢
Tie plates, Pacific Coast	2.70¢
Track bolts	4.75¢
Track bolts, heat treated, to railroads	5.00¢
Track bolts, jobbers discount	63-5

Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

TOOL STEEL

*(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, O.)*
An increase of 8.2 pct applies to extras

	base per lb
High speed	72.5¢
Straight molybdenum	58.4¢
Tungsten-molybdenum	62.2¢
High-carbon-chromium*	46.5¢
Oil hardening*	26.0¢
Special carbon*	23.8¢
Extra carbon*	19.5¢
Regular carbon*	15.2¢

Warehouse prices east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless-clad		
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Pa.	18.72*	19.76
Nickel-clad		
10 pct, f.o.b. Coatesville, Pa.	18.72	....
Inconel-clad		
10 pct, f.o.b. Coatesville	26.00	....
Monel-clad		
10 pct, f.o.b. Coatesville	24.96	....
Aluminized steel		
Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

*Includes annealing and pickling.

WIRE PRODUCTS

To the dealer, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points Named	Pacific Coast Basing Points†
	base per keg	
Standard wire nails	$3.25	$3.75
Coated nails	3.25	3.75
Cut nails, carloads	3.85	....
	base per 100 lb	
Annealed fence wire	$3.50	$4.00
Annealed galv. fence wire	3.85	4.35
	base column	
Woven wire fence*	72	90
Fence posts, carloads	74	91
Single loop bale ties††	72	97
Galvanized barbed wire**	79	89
Twisted barbless wire	79	89

*15½ gage and heavier. **On 80-rod spools in carload quantities.

†Prices subject to switching or transportation charges.

††Add 50¢ a ton.

ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb coating I.C.	$8.50	$17.00
15-lb coating I.C.	9.50	19.00
20-lb coating I.C.	10.00	20.00

ALLOY EXTRAS

Alloy Steel	Basic Openhearth		Electric Furnace	
	Bars and Bar-strip	Billets, Blooms and Slabs	Bars and Bar-strip	Billets, Blooms and Slabs
NE 8600	0.676¢	$13.52	1.196¢	$23.92
NE 8700	0.728	14.56	1.248	24.96
NE 9400	0.780	15.60	1.300	26.00
NE 9700	0.676	13.52	1.196	23.92
NE 9800	1.352	27.04	1.872	37.44
NE 9900	1.248	24.96	1.612	32.24

The extras shown are in addition to the base price of $2.808 per 100 lb on finished products and $56.16 per gross ton on semifinished steel, major basing points, as shown in table, opposite page, and are in cents per pound when applicable to bars and bar-strip and in dollars per gross ton when applicable to billets, blooms and slabs. When acid openhearth is specified and acceptable, add to basic openhearth alloy differential 0.26¢ per lb for bars and bar-strip and $5.20 per gross ton for billets, blooms and slabs.

WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills

(F.o.b. Pittsburgh only on wrought pipe) base price—$200.00 per net ton

	Black	Galv.
Steel (buttweld)		
½-in.	60½	48
¾-in.	63½	52
1-in. to 3-in.	65½	54½
Wrought Iron (buttweld)		
½-in.	18	+4
¾-in.	24	2½
1-in. and 1¼-in.	28½	9
1½-in.	33	12
2-in.	32	11
Steel (lapweld)		
2-in.	58	46½
2½-in. and 3-in.	61	49½
3½-in. to 6-in.	63	51½
Wrought Iron (lapweld)		
2-in.	25	4½
2½-in. to 3½-in.	26	7
4-in.	28	11
4½-in. to 8-in.	27	10
Steel (butt, extra strong, plain ends)		
½-in.	58½	47½
¾-in.	62½	51½
1-in. to 3-in.	64	54
Wrought Iron (same as above)		
½-in.	19	+1½
¾-in.	25	4½
1-in. to 2-in.	33	13
Steel (lap, extra strong, plain ends)		
2-in.	56	45½
2½-in. and 3-in.	60	49½
3½-in. to 6-in.	63½	53
Wrought Iron (same as above)		
2-in.	28	8½
2½-in. to 4-in.	34	16
4½-in. to 6-in.	32	14½

On buttweld and lapweld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or $4 a ton higher than Pittsburgh or Lorain on lapweld and one point lower discount, or $2 a ton higher on all buttweld.

BOILER TUBES

Seamless steel and lapweld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots

	Seamless Cold-Drawn	Seamless Hot-Rolled	Lapweld, Hot-Rolled
2 in. O.D. 13 B.W.G.	16.52	13.90	13.20
2½ in. O.D. 12 B.W.G.	22.21	18.70	17.67
3 in. O.D. 12 B.W.G.	24.71	20.79	19.56
3½ in. O.D. 11 B.W.G.	31.18	26.25	24.68
4 in. O.D. 10 B.W.G.	38.68	32.56	30.55

(Extras for less carload quantities)

40,000 lb or ft and over.....Base
30,000 lb or ft to 39,999 lb or ft.... 5 pct
20,000 lb or ft to 29,999 lb or ft....10 pct
10,000 lb or ft to 19,999 lb or ft....20 pct
5,000 lb or ft to 9,999 lb or ft....30 pct
2,000 lb or ft or 4,999 lb or ft....45 pct
Under 2,000 lb or ft.....65 pct

CAST IRON WATER PIPE

Per Net Ton

6-in. and larger, del'd Chicago....$60.80
6-in. and larger, del'd New York... 60.20
6-in. and larger, Birmingham..... 52.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles or Seattle 74.00

For all rail shipment; rail and water shipment less.

Class "A" and gas pipe, $3 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

Base discount less case lots

Percent Off List

½ in. & smaller x 6 in. & shorter....65½
9/16 & ⅝ in. x 6 in. & shorter.....63½
¾ to 1 in. x 6 in. & shorter.....61
1⅛ in. and larger, all lengths.....59
All diameters over 6 in. long.....59
Lag, all sizes.....62
Plow bolts.....65

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller.....62
9/16 to 1 in. inclusive.....59
1⅛ to 1½ in. inclusive.....57
1⅝ in. and larger.....56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	U.S.S.	S.A.E.
Base discount less keg lots		
7/16 in. and smaller	..	64
½ in. and smaller	62	..
½ in. through 1 in.	..	60
9/16 in. through 1 in.	59	..
1⅛ in. through 1½ in.	57	58
1⅝ in. and larger	56	..

In full keg lots, 10 pct additional discount.

Stove Bolts

Consumer

Packages, nuts loose.....71 and 10
In packages.....71
In bulk.....80

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.

Large Rivets

(½ in. and larger)

Base per 100 Lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham.....$3.75

Small Rivets

(7/16 in. and smaller)

Percent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham.....65 and 5

Cap and Set Screws	*Consumer Percent Off List*
Upset full fin, hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.	64
Upset set screws, cup and oval points	71
Milled studs	46
Flat head cap screws, listed sizes	36
Fillister head cap, listed sizes	51

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Maximum price f.o.b. consumer's plant, $30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

Exception

When the WPB Steel Div. certifies in writing the consumers need for one of the higher grades of metallurgical fluorspar specified in the table below the price shall be taken from the table plus items (1 and 2) from paragraph above.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

METAL POWDERS

Prices are based on current market prices of ingots plus a fixed figure. F.o.b. shipping point, cents per lb, ton lots.

Copper, electrolytic, 150 and 200 mesh.....21½¢ to 23½¢
Copper, reduced, 150 and 200 mesh.....20¼¢ to 25½¢
Iron, commercial, 100 and 200 mesh 96 + % Fe.....12½¢ to 15¢
Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots..... 4¢
Iron, hydrogen reduced, 300 mesh and finer, 98½ + % Fe, drum lots..... 63¢
Iron, electrolytic, unannealed, 300 mesh and coarser, 99 + % Fe 30 to 33¢
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe..... 42¢
Iron carbonyl, 300 mesh and finer, 98-99.8 + % Fe..... 90¢
Aluminum, 100 and 200 mesh..... *25¢
Antimony, 100 mesh..... 30¢
Cadmium, 100 mesh..... $1.40
Chromium, 100 mesh and finer.... $1.25
Lead, 100, 200 & 300 mesh....11½ to 15¢
Manganese..... 65¢
Nickel, 150 mesh..... 51½¢
Solder powder, 100 mesh..8½¢ plus metal
Tin, 100 mesh..... 58¾¢
Tungsten metal powder, 98%-99%, any quantity, per lb..... $2.60
Molybdenum powder, 99%, in 200-lb kegs, f.o.b. York, Pa., per lb... $2.60
Under 100 lb..... $3.00

*Freight allowed east of Mississippi.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$7.50*
Foundry, beehive (f.o.b. oven)	
Fayette Co., W. Va.	8.10
Connellsville, Pa.	9.00
Foundry, Byproduct	
Chicago, del'd	13.75
Chicago, f.o.b.	13.00
New England, del'd	14.65
Kearny, N. J., f.o.b.	13.05
Philadelphia, del'd	13.28
Buffalo, del'd	13.40
Portsmouth, Ohio, f.o.b.	11.50
Painesville, Ohio, f.o.b.	12.15
Erie, del'd	13.15
Cleveland, del'd	13.20
Cincinnati, del'd	13.25
St. Louis, del'd	13.75†
Birmingham, del'd	10.90

*Hand drawn ovens using trucked coal permitted to charge $8.60 per ton plus transportation charges.

†Except producers situated in states other than Missouri, Alabama or Tennessee, sellers may charge a maximum delivered price of $14.25 in the St. Louis, Mo., and East St. Louis, Ill., switching districts.

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick*	*Per 1000*
Super-Duty brick, St. Louis	$76.05
First quality, Pa., Md., Ky., Mo., Ill.	60.40
First quality, New Jersey	65.90
Sec. quality, Pa., Md., Ky., Mo., Ill.	54.80
Sec. quality, New Jersey	57.70
No. 1 Ohio	50.00
Ground fire clay, net ton	8.95
Silica Brick*	
Pennsylvania and Birmingham	$60.40
Chicago District	69.30
Silica cement, net ton (Eastern)	10.60
Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Plymouth Meeting, Chester	$54.00
Magnesite Brick	
Standard, Balt. and Chester	$76.00
Chemically bonded, Baltimore	65.00
Grain Magnesite	
Domestic, f.o.b. Balt. and Chester in sacks (carloads)	$43.48
Domestic, f.o.b. Chewelah, Wash. in bulk	22.00
in sacks	26.00

*Retroactive to Apr. 1.

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)*

Per Gross Ton

Old range, bessemer, 51.50..... $4.95
Old range, non-bessemer, 51.50.... 4.80
Mesaba, bessemer, 51.50..... 4.70
Mesaba, non-bessemer, 51.50..... 4.55
High phosphorus, 51.50..... 4.35

*Adjustments are made to indicate prices based on variance of Fe content of ores as analyzed on a dry basis by independent laboratories.

WAREHOUSE PRICES*

Delivered metropolitan areas per 100 lb. These are zoned warehouse prices in conformance with latest zoning amendment to OPA Price Schedule 49.

Cities	SHEETS			STRIP		Plates ¼ in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 gage)	Cold Rolled	Galvanized (24 gage)	Hot Rolled	Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled, NE 8617-20	Hot Rolled, NE 9442-45 Ann.	Cold Drawn, NE 8617-20	Cold Drawn, NE 9442-48 Ann.
**Philadelphia	$3.518	$4.872[5]	$4.868[a]	$3.922	$4.772	$3.605	$3.666	$3.822	$4.172	$5.816	$6.866	$7.072	$8.172
New York	3.59	4.613	5.210	3.974[6]	4.772	3.768	3.758	3.853	4.203	5.858	6.908	7.103	8.203
Boston	3.744	4.744[9]	5.324[9]	4.106	4.715	3.912	3.912	4.044	4.244	6.012	7.062	7.194	8.394
Baltimore	3.394	4.852	4.994	3.902	4.752	3.594	3.759	3.802	4.152	....	....	....	....
Norfolk	3.771	4.965	5.471	4.165	4.865	3.971	4.002	4.065	4.265	....	....	....	....
Chicago	3.25	4.2C	5.331	3.60	4.65[17]	3.55	3.55	3.50	3.85	5.80	6.65	6.65	7.75
Milwaukee	3.387	4.337	5.372	3.737	4.787[17]	3.687	3.687	3.637	3.987	5.837	6.887	6.887	8.137
Cleveland	3.35	4.40	4.977	3.60	4.45[17]	3.40	3.588	3.35	3.85	5.806	6.856	6.65	7.75
Buffalo	3.35	4.40	4.85	3.819	4.669	3.63	3 40	3.35	3.85	5.60	6.65	6.65	7.75
Detroit	3.45	4.50	5.10	3.70	4.659[17]	3 609	3.661	3.45	3.90	5.93	6.98	6.959	8.059
Cincinnati	3.425	4.475	4.925[5]	3.675	4.711	3.661	3.691	3.611	4.111	5.95	7.00	7.011	8.261
St Louis	3.397	4.347	5.231	3.747	4.931[17]	3.697	3.697	3.647	4.131	5.981	7.031	7.031	8.131
Pittsburgh	3.35	4.40	4.85	3.60	4.45	3.40	3.40	3 35	3.85	5.60	6.65	6.65	7.75
St. Paul	3.50	4.46	5.357	3.86	5.102[17]	3.81[13]	3.81[13]	3.76[13]	3.461	5.94	6.99	7.381	8.461
Omaha	3.865	5.443	5.615	4.143	....	4.093	4 093	4.043	4.543	....	....	....	....
Indianapolis	3.52	4.568	5.018	3.768	4.741	3.63	3.63	3.58	4.08	5.93	6.98	6.98	8.23
Birmingham	3.45	....	4.85	3.70	....	3.55	3.55	3.65	4.53	....	....	....	....
Memphis	3.965	4.78	5.365	4.215	....	4.065	4.065	4.015	4.33	....	....	....	....
New Orleans	4.058*	5.079	5.458	4.308	....	4.158	4.158*	4.108*	4.729	....	....	....	....
Houston	3.763	5.573	6.413[1]	4.313	....	4.25	4 25	3.75	6.473[3]	7.223	8.323	8.323	9.373
Los Angeles	5.00	7.20	6.20	4.95	5.613[15]	4.95	4.65	4.40	5.683	8.204	9.404	9.304	10 454
San Francisco	4.55[14]	7.30[4]	6.45	4.50[14]	7.333[17]	4.65[14]	4.35[14]	4.15[14]	5.433	8.304	9.404	9.404	10.454
Seattle	4.65[12]	7.05[4]	6.05	4.25[12]	....	4.75[12]	4.45[12]	4.35[12]	5.783	....	9.404	....	....
Portland	4.65[11]	6.60[4]	5.85	4.75[11]	....	4.75[11]	4.45[11]	4.45[11]	5.633	8.304	9.404	8.304	9.404
Salt Lake City	4.530[17]	....	6.271[3]	5.53[17]	....	4.98[17]	4.98[17]	4.88[17]	6.00	....	....	....	....

* Until new detailed warehouse prices are reported by distributors, no change will be made in the prices above. However, OPA says recent steel price adjustments may be added to the prices quoted here.

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-FINISHED: Sheets, 400 to 1499 lb; strip, extras on all quantities; bars, 1500 lb base.

GALVANIZED: 450 to 1499 lb.

NE ALLOY BARS: 1000 to 39,999 lb.

EXCEPTIONS: (1) 150 to 499 lb. (2) 150 to 1499 lb. (3) 400 to 1499 lb. (4) 450 to 1499 lb. (5) 500 to 1499 lb. (6) 0 to 199 lb. (7) 400 to 1499 lb. (8) 1000 to 1999 lb. (9) 450 to 3749 lb. (10) 400 to 3999 lb. (11) 800 to 4999 lb. (12) 800 to 10,000 lb. (13) 400 to 14,999 lb. (14) 400 lb and over. (15) 1000 lb and over. (16) 1500 lb and over. (17) 2000 lb and over. (18) 3500 lb and over.

(a) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

*Add 0.271¢ for sizes not rolled in Birmingham.

**City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

PIG IRON PRICES

Maximum per gross ton, effective Mar. 15, 1946.
Prices do not reflect 3 pct tax on freight.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	27.00	27.50	28.00	28.50	.....	Boston	Everett	0.50	27.50	28.00	28.50	29.00	.....
Birdsboro	27.00	27.50	28.00	28.50	32.00	Boston	Birdsboro-Steelton	4.02	.....	.....	.....	.....	36.02
Birmingham	21.50	22.88	.....	27.50	.....	Brooklyn	Bethlehem	2.50	29.50	30.00	30.50	31.00	.....
Buffalo	25.50	26.50	27.00	27.50	32.00	Brooklyn	Birdsboro	2.92	.....	.....	.....	.....	34.92
Chicago	26.00	26.50	26.50	27.00	.....	Canton	Clev. Ygstn, Sharpsvil.	1.39	27.39	27.89	27.89	28.39	.....
Cleveland	26.00	26.50	26.50	27.00	.....	Canton	Buffalo	3.19	.....	.....	.....	.....	35.19
Detroit	26.00	26.50	26.50	27.00	.....	Cincinnati	Birmingham	4.06	25.56	26.94	.....	.....	.....
Duluth	26.50	27.00	27.00	27.50	.....	Cincinnati	Hamilton	1.11	.....	.....	27.61	.....	.....
Erie	26.00	26.50	27.00	27.50	.....	Cincinnati	Buffalo	4.40	.....	.....	.....	.....	36.40
Everett	27.00	27.50	28.00	28.50	.....	Jersey City	Bethlehem	1.53	28.53	29.03	29.53	30.03	.....
Granite City	26.00	26.50	26.50	27.00	.....	Jersey City	Birdsboro	1.94	.....	.....	.....	.....	33.94
Hamilton	26.00	26.50	26.50	.....	.....	Los Angeles	Provo	4.95	28.95	29.45	.....	.....	.....
Neville Island	26.00	26.50	26.50	27.00	.....	Los Angeles	Buffalo	15.41	.....	.....	.....	.....	47.41
Provo	24.00	24.50	.....	.....	.....	Mansfield	Cleveland-Toledo	1.94	27.94	28.44	28.44	28.94	.....
Sharpsville[1]	26.00	26.50	26.50	27.00	.....	Mansfield	Buffalo	3.36	.....	.....	.....	.....	35.36
Sparrows Point	27.00	27.50	.....	.....	.....	Philadelphia	Swedeland	0.84	27.84	28.34	28.84	29.34	.....
Steelton	27.00	.....	.....	.....	32.00	Philadelphia	Birdsboro	1.24	.....	.....	.....	.....	33.24
Swedeland	27.00	27.50	28.00	28.50	.....	San Francisco	Provo	4.95	28.95	29.45	.....	.....	.....
Toledo	26.00	26.50	26.50	27.00	.....	San Francisco	Buffalo	15.41	.....	.....	.....	.....	47.41
Youngstown	26.00	26.50	26.50	27.00	.....	Seattle	Provo	4.95	28.95	29.45	.....	.....	.....
						Seattle	Buffalo	15.41	.....	.....	.....	.....	47.41
						St. Louis	Granite City	0.50	26.50	27.00	27.00	27.50	.....
						St. Louis	Buffalo	7.07	.....	.....	.....	.....	39.07

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, $33.00 and $34.00, respectively. Newberry Brand of Lake Superior charcoal iron $39.00 per g.t., f.o.b. furnace, by order L 39 to RPS 10. Apr. 11, 1945, retroactive to Mar. 7, 1945. Delivered to Chicago, $42.34. High phosphorus iron sells at Lyles, Tenn., at $28.50.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorous content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. Effective Mar. 3, 1943, $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron and bessemer ferrosilicon up to and including 14.00 pct silicon covered by RPS 10 as amended. Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—$32.00; f.o.b. Buffalo—$33.25. Add $1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for prices of comparable analysis.

Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.

Carload lots (bulk)	$135.00
Less ton lots (packed)	148.50
F.o.b. Pittsburgh	139.50

$1.70 for each 1% above 82% Mn; penalty, $1.70 for each 1% below 78%.

Briquets—per pound of briquet, freight allowed, 66% contained Mn.

	Eastern	Central	Western
Carload, bulk	6.05¢	6.30¢	6.60¢
Ton lots	6.65¢	7.55¢	8.55¢
Less ton lots	6.80¢	7.80¢	8.80¢

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$35.00	$36.00
Less ton	47.50	48.50
F.o.b. Pittsburgh, Chicago	40.00	

Manganese Metal

Contract basis, lump size, per pound of metal, f.o.b. shipping point, freight allowed.

96-98% Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, bulk	30¢
L.c.l. lots	32¢

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	34¢
Ton lots	36¢
Less ton lots	38¢

Low-Carbon Ferromanganese

Contract price per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.10% max. C, 0.06% P, 90% Mn	21.00¢	21.40¢	21.65¢
0.10% max. C, 1% max. Si	20.50¢	20.90¢	21.15¢
0.15% max. C, 1% max. Si	20.00¢	20.40¢	20.65¢
0.30% max. C, 1% max. Si	19.50¢	19.90¢	20.15¢
0.50% max. C, 1% max. Si	19.00¢	19.40¢	19.65¢
0.75% max. C, 7.00% max. Si	16.00¢	16.40¢	16.65¢

Silicomanganese

Contract basis, lump size, per pound of metal, f.o.b. shipping point, freight allowed. 65-70% Mn, 17-20% Si, 1.5% max. C.

Carload, bulk	6.05¢
Ton lots	6.70¢
Briquet, contract basis, carlots, bulk, freight allowed, per lb. of briquet	5.80¢
Ton lots	6.30¢
Less ton lots	6.55¢

Silvery Iron (electric furnace)

Si 14.01 to 14.50%, $48.75 f.o.b. Keokuk, Iowa; $46.75 f.o.b. Niagara Falls. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%. Covered by MPR 405.

Silicon Metal

Contract price per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots, packed.

	Eastern	Central	Western
96% Si, 2% Fe	13.10¢	13.55¢	16.50¢
97% Si, 1% Fe	13.45¢	13.90¢	16.80¢

Ferrosilicon Briquets

Contract price per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination. 40% Si.

	Eastern	Central	Western
Carload, bulk	3.35¢	3.50¢	3.65¢
Ton lots	3.80¢	4.20¢	4.25¢

Electric Ferrosilicon

Contract price per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
50% Si	6.65¢	7.10¢	7.25¢
75% Si	8.05¢	8.20¢	8.75¢
80-90% Si	8.90¢	9.05¢	9.55¢
90-95% Si	11.05¢	11.20¢	11.65¢

Ferrochrome (65-72% *Cr, 2% max. Si*)

Contract prices per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	23.00¢	23.40¢	24.00¢
0.10% C	22.50¢	22.90¢	23.50¢
0.15% C	22.00¢	22.40¢	23.00¢
0.20% C	21.50¢	21.90¢	22.50¢
0.50% C	21.00¢	21.40¢	22.00¢
1.00% C	20.50¢	20.90¢	21.50¢
2.00% C	19.50¢	19.90¢	20.50¢
66-71% Cr, 4-10% C	13.00¢	13.40¢	14.00¢
62-66% Cr, 5-7% C	13.50¢	13.90¢	14.50¢

Briquets—contract price per pound of briquet, f.o.b. shipping point, freight allowed. 60% chromium.

	Eastern	Central	Western
Carload, bulk	8.25¢	8.55¢	8.95¢
Ton lots	8.75¢	9.25¢	10.75¢
Less ton lots	9.00¢	9.50¢	11.00¢

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66-71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

S. M. Ferrochrome

Contract price per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload	14.00	14.40	15.00
Ton lots	14.90	15.55	16.75
Less ton lots	15.40	16.05	17.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25 max. C.

	Eastern	Central	Western
Carload	20.00	20.40	21.00
Ton lots	21.00	21.65	22.85
Less ton lots	22.00	22.65	23.85

Chromium Metal

Contract prices per pound, chromium contained, carload, f.o.b. shipping point, freight allowed. 97% min. Cr, 1% max. Fe.

	Eastern	Central	Western
0.20% max. C	83.50	85.00	86.25
0.50% max. C	79.50	81.00	82.25
9.00% min. C	79.50	81.00	82.25

Chromium—Copper

Contract price per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si.

Shot or ingot	45¢

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.

30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads	13.00	13.50	15.55
Ton lots	14.50	15.25	17.40
Less ton lots	15.50	16.25	18.40

Calcium—Manganese—Silicon

Contract prices per pound of alloy, lump, f.o.b. shipping point, freight allowed.

16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads	15.50¢	16.00¢	18.05¢
Ton lots	16.50¢	17.35¢	19.10¢
Less ton lots	17.00¢	17.85¢	19.60¢

Calcium Metal

Eastern zone contract prices per pound of metal, f.o.b. shipping point, freight allowed. Add 1¢ for central zone; 5¢ for western zone.

	Cast	Turnings	Distilled
Ton lots	$1.35	$1.75	$4.25
Less ton lots	1.60	2.00	5.00

CMSZ

Contract price per pound of alloy, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.			
Ton lots	12.00¢	12.75¢	14.75¢
Less ton lots	12.50¢	13.25¢	15.25¢
Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.			
Ton lots	11.75¢	12.50¢	14.50¢
Less ton lots	12.25¢	13.00¢	15.00¢

SMZ

Contract price per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe.

	Eastern	Central	Western
Ton lots	12.00¢	12.85¢	14.60¢
Less ton lots	12.50¢	13.35¢	15.10¢

Other Ferroalloys

Ferrotungsten, standard, lump or ½ X down, packed, f.o.b. plant Niagara Falls, Washington, Pa., York, Pa., per pound contained T, 5 ton lots, freight allowed	$1.88
Ferrovanadium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V...	
Openhearth	$2.70
Crucible	$2.80
High speed steel (Primos)	$2.90
Vanadium pentoxide, 88-92% V_2O_5 technical grade, contract basis, per pound contained V_2O_5	$1.10
Ferrotitanium, 40-45%, 0.10%C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Less ton lots	$1.25
Ferrotitanium, 20-25%, 0.10%C max., ton lots, per pound contained Ti	$1.35
Less ton lots	$1.40
High-carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads	$142.50
Ferrophosphorus, 18%, electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with $3 unitage freight equalled with Rockdale, Tenn., per gross ton	$58.50
Ferrophosphorus, Electrolytic, 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., $3 unitage freight equalized with Nashville, per gross ton	$75.00
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo	95¢
Calcium molybdate, 40-45¢, f.o.b. Langeloth, Washington, Pa., per pound contained Mo	80¢
Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo	80¢
Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo	80¢
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	14¢
Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy	
Carload, bulk	4.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload	5.75¢
Ton lots	7.25¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound.	
Car lots	8.00¢
Ton lots	8.75¢
Less ton lots	9.25¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed. Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.

	Eastern	Central	Western
Less ton lots	$1.30	$1.3075	$1.329

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.

Ton lots	$1.89	$1.903	$1.935
Less ton lots	2.01	2.023	2.055

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.

Less ton lots	$2.10	$2.1125	$2.1445

Silcaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	25¢
Ton lots	26¢
Silvaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Carload lots	58¢
Ton lots	59¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.	
No. 1	87.5¢
No. 6	60¢
No. 79	45¢
Bortram, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb.	
Ton lots	$2.25
Less ton lots	$2.30

Labor Department Streamlines Its Conciliation Service

(CONTINUED FROM PAGE 110)

sioner may feel called upon to warn the union negotiators that an onerous contract is apt to provoke retaliation from the employer as soon as his bargaining position has improved.

Another role that conciliators frequently play is to supply information to both sides about prevailing practices within a given branch of industry. These may include wages, hours and working conditions, union security, vacation pay and grievance procedure. If a commissioner's own background has not given him a particular piece of information he usually can get a quick answer from sources within the Labor Dept.

While the Conciliation Service centers upon conference table methods, not all disputes are settled in this fashion. Some cases involve technical questions that call for special analysis to bring out pertinent facts. For some years the service has maintained a Technical Div., staffed with commissioners equipped to make studies and findings of fact when both parties ask for this service. The results of such studies are turned over to the parties themselves for their own use in further bargaining.

This work has included: Extensive time and observation studies in the textile field; time studies in other fields, such as tire building, motor car assembly and radio manufacturing; advice on the mechanics of incentive plans; consultation where job evaluation questions arose; and discussion of disputes over job descriptions where no job evaluation plan exists.

Necessarily, the work done by members of the technical staff depends on the problem involved. Last year this division extended its work into a total of 21 industries. Several moves are underway to strengthen and improve this arm of the Conciliation Service. The division is decentralizing and the commissioners have been assigned to the various regional offices where they will work under the administrative supervision of the regional director.

(CONTINUED ON PAGE 134)

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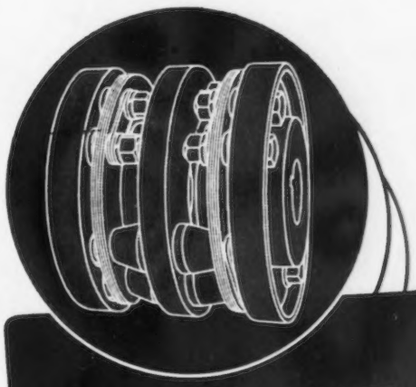

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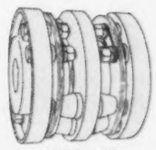

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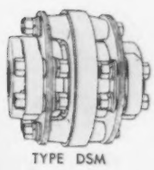

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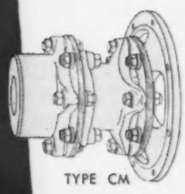

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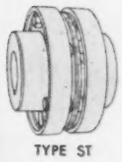

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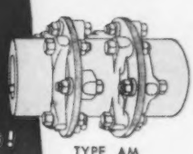

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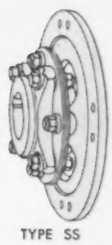

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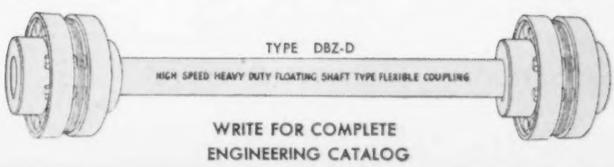

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HOW SEMS are made, how they reduce hand assembly methods and costs . . . why they're faster, better, easier to handle . . . assembly advantages, applications and methods . . . cost comparison charts to use in actually figuring your savings beforehand . . . type and size data . . . ordering information . . . plus useful engineering data. Write for this free SEMS book today . . . any of the manufacturers listed on the next page will send it to you.

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Manufacturers Screw Products
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National Lock Co.
Rockford, Ill.

The National Screw & Mfg. Co.
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New England Screw Co.
Keene, N. H.

Pheoll Manufacturing Co.
Chicago, Ill.

Progressive Manufacturing Co.
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Scovill Manufacturing Company
Waterville, Division
Waterville, Conn.

Shakeproof Inc.
Division of Illinois Tool Works
Chicago, Ill.

Steel Co. of Canada, Ltd.
Hamilton, Ont., Canada

(CONTINUED FROM PAGE 131)

There is an increasing tendency for union agreements to include arbitration clauses—particularly as the end point in the handling of grievances. In the past the Conciliation Service has had a staff of commissioners with specific arbitration training who hear cases and make awards when both sides jointly request it. This feature of the service is under careful study at present and plans for strengthening it are being developed.

Though this discussion really involves the work of some 300 conciliators whose individual techniques differ widely, the principles which they follow do not vary. They must bring to each dispute fact, resourcefulness and utter impartiality, together with experience in the complex field of industrial relations. Finally, and most important, they must have insight into the causes of human behavior.

This is far from presenting a magic cure-all for labor-management disputes, but it does offer a fair, democratic solution in the vast majority of cases where industrial storm clouds have gathered.

Gallup Polls

(CONTINUED FROM PAGE 107)

the question of what Congress should do divide up:

31 pct favor action involving some sort of discipline of labor unions.

4 pct favor a general policy of granting union demands for higher wages.

15 pct favor provisions requiring cooling-off period, discussion before workers go out on strike.

20 pct offer miscellaneous suggestions or have no specific suggestion to offer.

• • • As the work of the Famine Emergency Committee goes forward, virtually nine out of every ten voters say they have heard or read about the plan to send food to other nations during the weeks ahead.

There is also indication, however, that American families could participate more fully in conserving foods, as requested by the committee.

At the present time, more than half of the families included in the interviewing say they are doing something about saving food.

That a great many people can support the program without harm to themselves is evidenced by the fact that nearly half among those interviewed by institute field reporters said they thought their health would be better if they ate less.

The questioning of field reporters for the institute included the following:

"Have you heard or read about the plan to send food to other nations during the next four months?"

The replies:

	Pct
Yes	92
No	8

"Is your family doing anything now to save on food?"

	Pct
Yes	56
No	40
Don't know	4

Those who said their families are participating in the food saving program were asked to tell in what way. Here are the replies in the order of the frequency with which they were mentioned:

(1) Cutting down on food; eating less; doing without things.

(2) Making it a point to use left-overs at the next (or another) meal.

(3) Saving fats and drippings.

(4) Eating more of foods not especially needed.

(5) Growing own vegetables.

(6) Eating rye and/or whole wheat bread instead of white.

An interesting sidelight in the present study is found in replies to the question:

"Do you think your health would be better or worse if you ate less?"

In few nations of the world today could you find nearly half of those questioned saying they think their health would be better if they ate less. Yet that is what replies to the question show:

	Pct
Better	44
Worse	27
Same	25
Undecided	4

Professional and business people are particularly prone to consider themselves over-eaters. More than half of them think they should do less eating. More women than men think they should eat less. This is particularly true of women over 30 yr of age. The same trend of thinking is found among the men. Those over 30 are more inclined to think they eat too much than those between 21 and 29 yr of age.

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The ordinary Shot and Grit will not do. They break down too fast and wear away quickly. In other words—expensive at any price.

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More cleaning and less dust at less cost.

And, remember—any old size won't do.

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Let us prove it!

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Manchester, New Hampshire

London Economist

(CONTINUED FROM PAGE 113)

for credentials, perhaps an equivalent number of the public, which means representatives of organizations interested in foreign affairs, heads of women's clubs, prominent citizens of various categories. Press balconies rise at each end, and along one side a row of boxes hung from the ceiling houses radio control rooms and the long muzzles of movie and television cameras waiting to flash every twitch of passion, every sign of indecision to the world outside. The precedent was set at San Francisco that citizens' organizations had an important role to play in keeping the American public informed and reasonably patient with the slow process of building an international organization that might work. In a country likely to be swept by sudden storms of enthusiasm followed by periods of boredom, those on the side of the angels had to be kept at work to stave off raids by groups of more dubious allegiance. So there are in the audience certain international "do-gooders" whose faces were well known in Geneva. There is also a grim reminder that because Geneva failed, the game this time is to be played in earnest. Two rows of public seats in the center of the Chamber were filled at every session by wounded men in uniform who came limping in at the beginning and sat through until end.

The first session was given over to speeches of welcome, dull as they were formal. On the second day, the delegates got down to business, and it was then that American spectators, unused to watching international discussion but brought up from childhood in the rules of order that govern debating societies and committee meetings, found themselves in the position of the little boy who said out loud that the Emperor had no clothes on. The Security Council appeared to have no framework of procedure to govern its meetings and its arguments. There sat the round-faced Dr. Quo, flanked by the Secretary and the Assistant Secretary, and beyond them the representatives of ten great nations and small ones, nations that numbered some three or four hundred million people, that con-

(CONTINUED ON PAGE 138)

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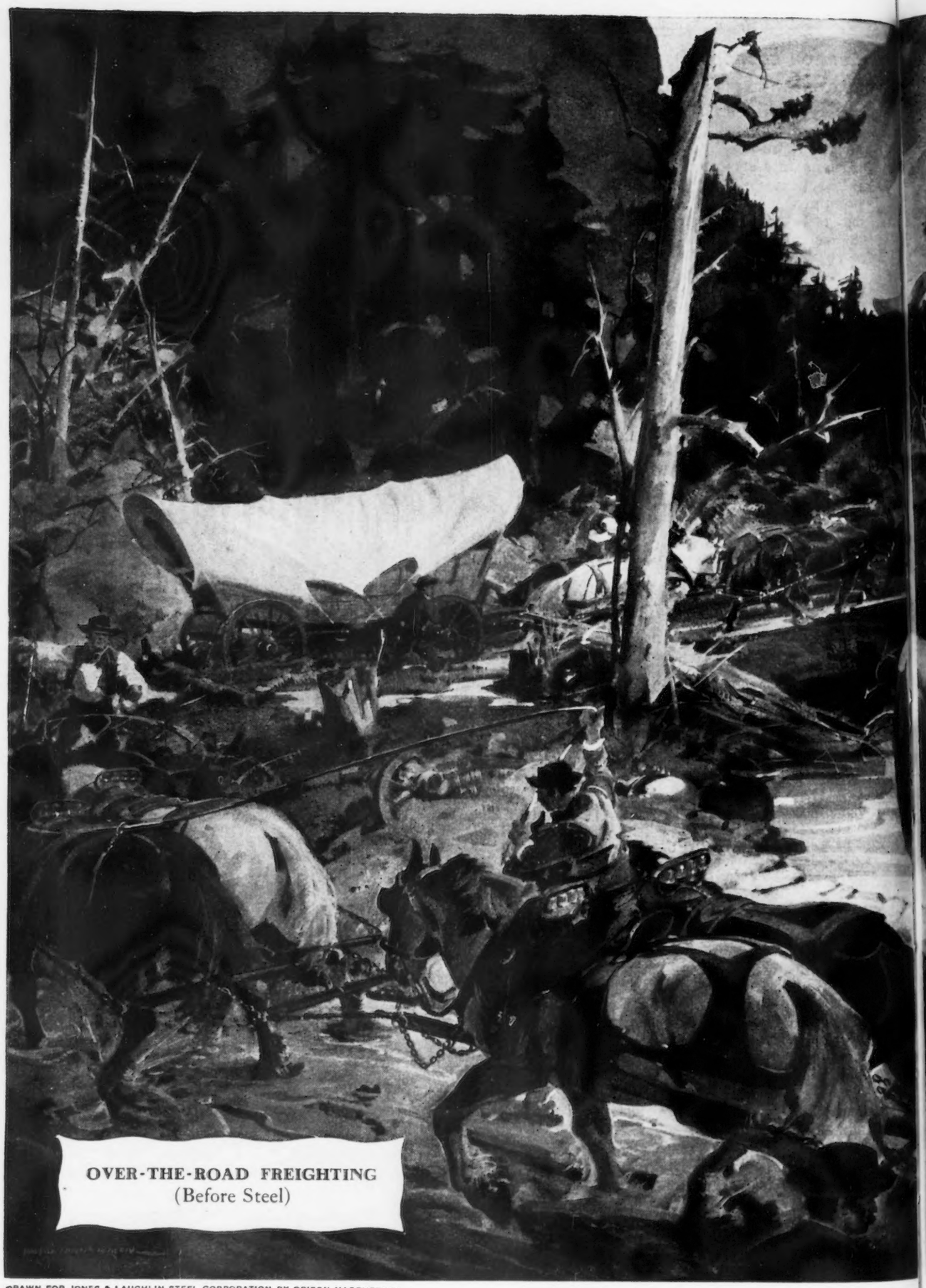

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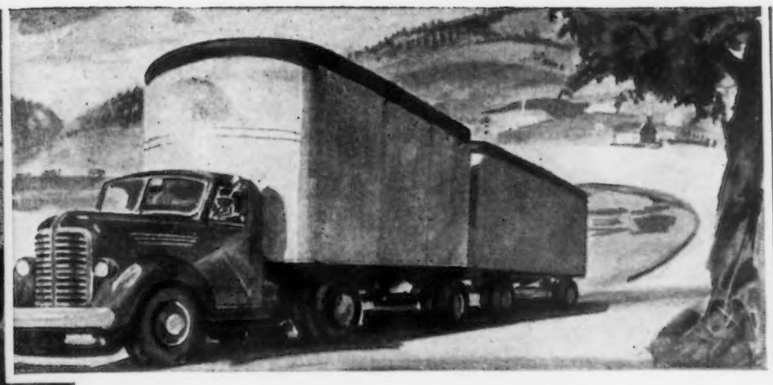

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Without steel, you could only afford to ship goods to nearby markets in small lots on the backs of pack mules, or in lumbering, six-horse Conestoga wagons, often through the hub-deep mud of storm-swept mountain roads. On long hauls the wagon freight rate sometimes was double the value of the shipment.

Steel has changed all that, and made possible the swift, flexible, low-cost freight service that motor transport brings to your door today. The bodies for new, heavy-duty, medium and light trucks are being built of new, stronger steels for lighter weight construction. One of these is Otiscoloy steel, a Jones & Laughlin development. The great strength of Otiscoloy enables saving of weight in truck bodies with corresponding increases in pay loads. Moreover, Otiscoloy is resistant to the destructive forces of corrosion and abrasion. Its use reduces maintenance cost because repairs are less frequent.

With new trucks and trailers and wide, all-weather highways of easy grades and long, sweeping curves, over-the-road shipments of freight and express by motor transport are fast becoming heavier, speedier, safer and more frequent—because of steel.

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HIGHWAY FREIGHT

"Ships of inland commerce" were the graceful, boat-shaped Conestoga wagons with their spreading white tops. In bad weather it took them 3 weeks to make the freight haul between Philadelphia and Pittsburgh. Today's fleets of "highway motor ships," the great steel trucks and trailers, make the run overnight.

5 million trucks operate today in U. S. and ¼ million trailers and semi-trailers, more than half run by one-truck owners.

"Dutch Waggons" built in the 1700's took the name of the Conestoga Valley (near Lancaster, Pa.) where they originated, once occupied by Conestoga Indians.

Trucking industry employs 4 million (exclusive of those working on farm vehicles). This is more than any other transportation industry, says the American Trucking Associations, Inc.

"There with bells on" originated among Conestoga freighters proud of the bronze harness-bells that advertised safe arrival in a town. But, if wagon bogged down, it brought driver the humiliation of having to hand over his bells to the team that towed his wagon out.

Old-time Conestoga wagon complete with original harness, trappings, and bells rigged on life size models of six-horse team is on display in Pennsylvania Historical Museum, Harrisburg.

Long wagon trains a century-and-half ago, like motor truck lines of this century, brought the need for better roads. In 1794, the Lancaster Pike was completed to Philadelphia, first toll road in America. Twenty-four feet wide, surfaced with broken stone, it takes its place in history as a great road-building job, as does the 162-mile, 4-lane, all-weather, non-stop Pennsylvania Turnpike between Pittsburgh and Harrisburg opened in 1940, designed primarily to expedite motor freight transport.

1st motor truck made its appearance in Detroit in 1904, attracted skeptical attention amidst the plodding horse-drays.

Dump truck's big job is hauling excavated material away from building and other construction. Trucks with Otiscoloy steel bodies are enough lighter and stronger to take on additional pay load.

Coal trucked from mines exceeds 25 million tons a year. New trucks with strong Otiscoloy steel bodies can take on ¼ bigger load with no increase in overall weight. Otiscoloy's abrasion and corrosion resistance properties extend life of body.

10,000 freight wagons were in the Philadelphia-Lancaster-Pittsburgh run in 1800, according to one historian.

For Otiscoloy booklet (illustrated), giving technical information and suggested applications of this weight-saving J&L steel, write Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh.

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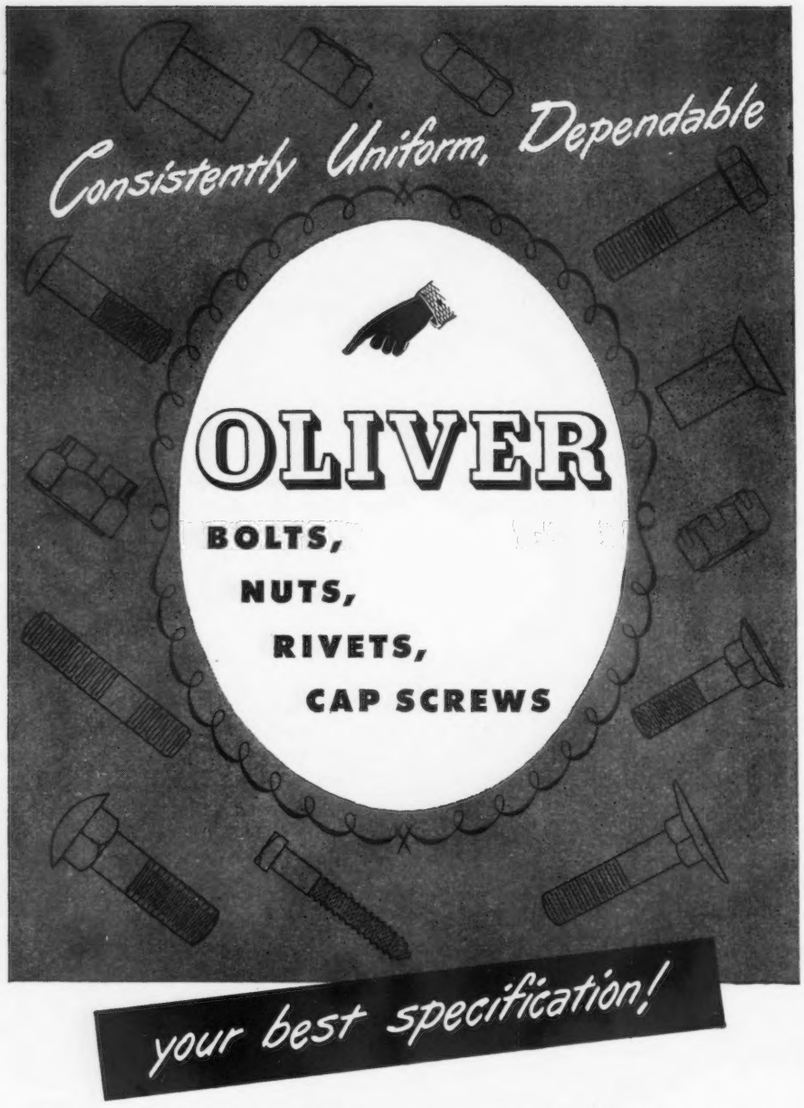

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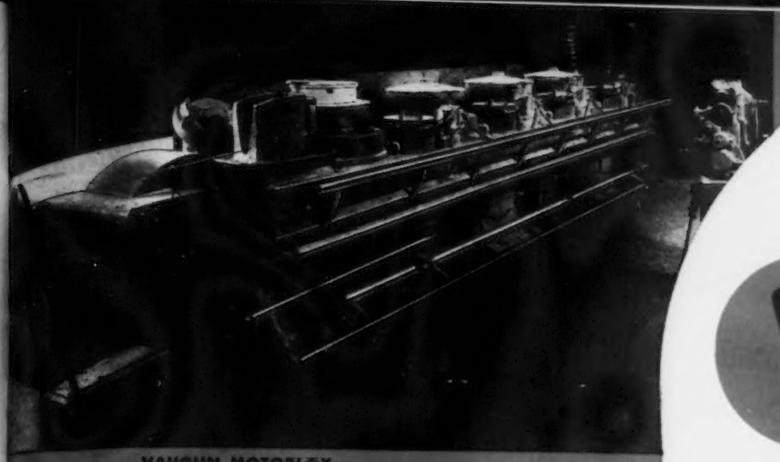
(CONTINUED FROM PAGE 135)

ducted their own internal affairs with varying degrees of acumen. Yet sitting as an international body for the second time this year they had not been able to decide whether they would delegate any authority to their chairman, or would discuss and vote on the procedure of debate as well as on the substance of debate. The lack of such a body of rules made the chairman look both foolish and capricious, a role which Dr. Quo, who is reputed to be neither, played with more philosophic calm than a westerner might have been able to muster.

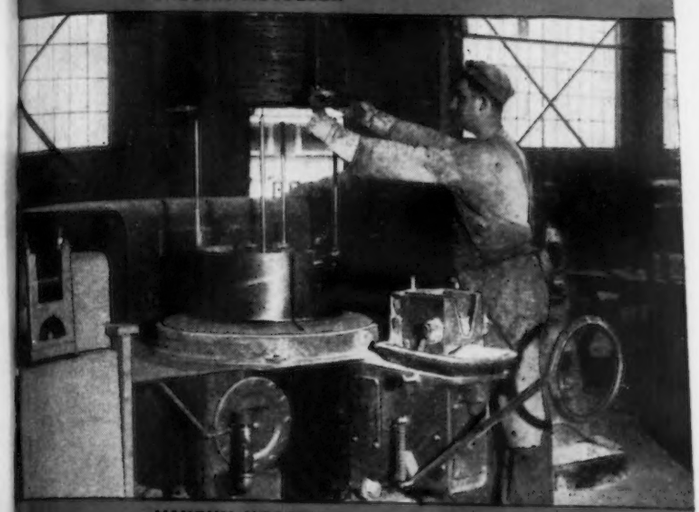
AMERICAN onlookers had read of this situation in the press reporting the London meeting, but seeing the confusion it created and the opportunity it gave for using chaos as a weapon made a bitter impression. Whatever Americans thought of the merits of the Iranian dispute, they were united in their outspoken comment that the game could not continue to be played very long without an agreed set of rules.

The ghosts of Geneva haunt the Bronx and will not be laid. The delegates of the smaller countries who got their training under the League—as those of the United States and the USSR who did not and are correspondingly handicapped—the members of the world press, the press credentials officer who stayed at her post until the summer of 1940 and then came out through a fallen France, all these have memories. Geneva failed, and this cannot afford to fail. The old Geneva hands felt ice water down the spine as the Soviet representative walked out of the session. The showdown may have been necessary, but the men who forced it looked no happier than did known Soviet sympathizers.

ON Mar. 19 the Supreme Soviet in Moscow unanimously appointed the new Russian Government, as proposed by Generalissimo Stalin, the Economist writes in an article on "The new Russian Government." It consists of 57 ministers, of whom about 50 have purely economic functions. The management of each major industry, including even fish, milk and meat processing, is constituted as a separate ministry. On the other hand, the list of ministries shows



VAUGHN MOTOBLOX



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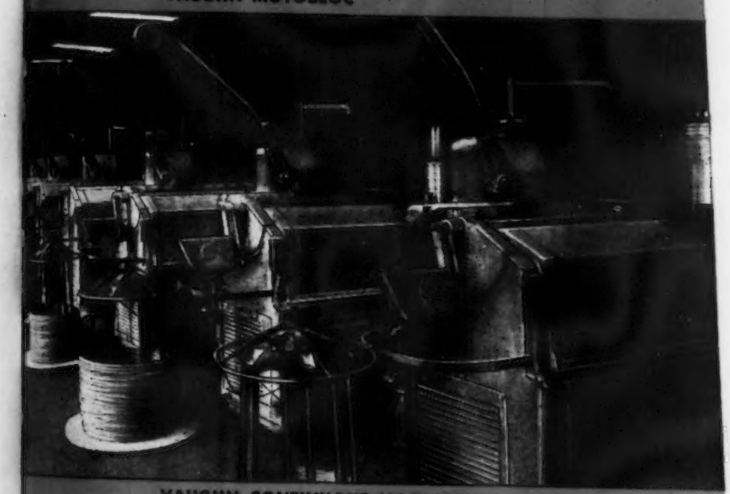
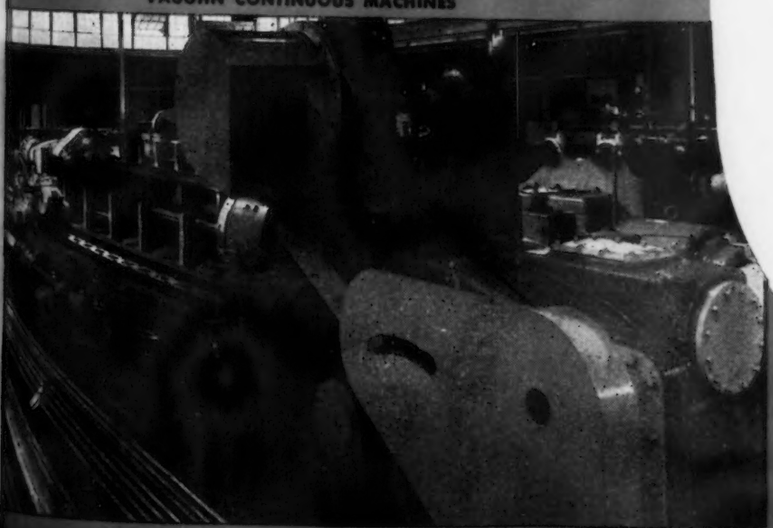


VAUGHN CONTINUOUS MACHINES



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More than ever before, production economies must be emphasized in the design of new products. In addition to reducing labor costs, product performance must be improved. Greater strength, more enduring service and definite economies in assembling operations can be achieved by specifying "Holtite" engineered fastenings.

Man hours in assembling operations can be saved at the drawing board! The right fastening for each application, specified in the design of your new products or when re-designing old products, will reduce production time and costs. Keep a copy of the Continental Screw Company illustrated catalog in your Engineering Dept. It contains comprehensive fastening data, full listing of all sizes, dimensions, weights, diagrams, recommendations and other helpful information.

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gaps, hardly conceivable in any other government. It does not include, for instance, a ministry of education, because education comes under the so-called Republican Government, as distinct from the Central Republican Government. This Council of Ministers is directed by a small inner Cabinet, in which the real power is concentrated. This consists of Generalissimo Stalin, prime minister as well as minister of defense, and of eight vice-premiers, some of whom are free from any departmental responsibilities. The eight vice-premiers are: Molotov, who also remains Minister of Foreign Affairs; Beria, until recently Commissar of Home Affairs; Andreyev, former Commissar of Agriculture in the crucial years of collectivization; Mikoyan, also Minister of Foreign Trade; Vosnesensky, who represents the State Planning Commission, of which he is chairman; Marshal Voroshilov; Kaganovitch, who is also Minister of the Building Materials Industry; and Kossegyn.

The debates in the Supreme Soviet were, as usual, a demonstration of complete unanimity. Neither the broad principles nor the details of the New Five-Year Plan as presented by Vosnesensky gave rise to any real discussion. All the members of the Supreme Soviet were equally enthusiastic about the transformation of the Council of People's Commissars into an ordinary Council of Ministers. Their acts were a tribute to a ritual of Parliamentary procedure which bears little relation to the actual practice of Cabinet formation in Moscow.

It would, nevertheless, be a mistake to assume that the appointment of a new Soviet Government has no political significance. For the formation of the new government appears to be important in that the latent rivalry between the party and the army has been resolved. Not a single representative of the new Officers' Corps has been appointed to any leading post. The eight vice-premiers are all members of "The Old Stalinist Guard" in the party. Molotov, Andreyev, Mikoyan, Kaganovitch and Voroshilov have been Stalin's closest associates for twenty odd years, since the days when he began his fight for leadership inside the party. Beria, Kossegyn and Vosnesensky

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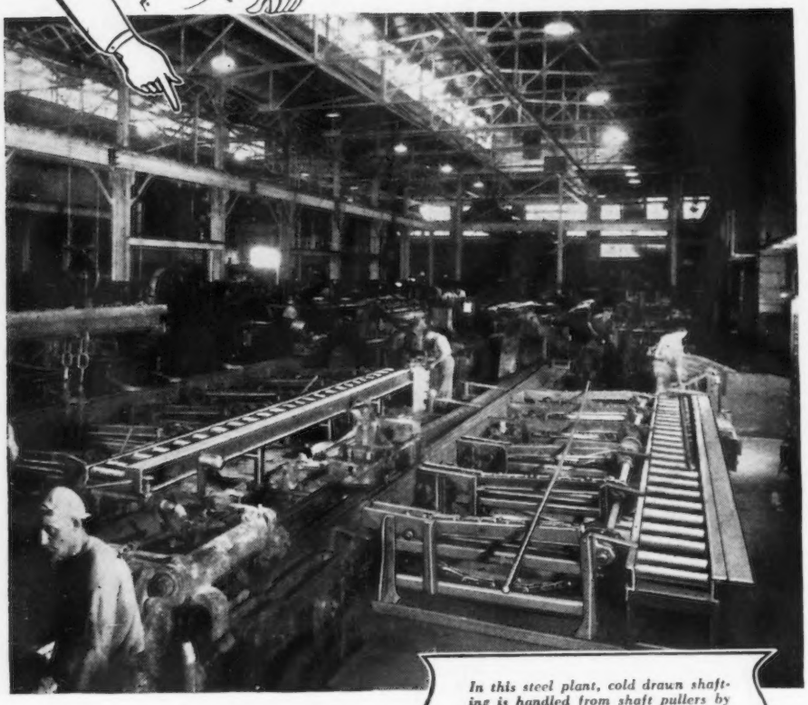

In this steel plant, cold drawn shafting is handled from shaft pullers by Logan Chain Transfers to Logan Live Roll Conveyors which feed shafting to shear. Two identical units are illustrated here. The handling is positive, efficient and fully automatic between operations named.

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belong to a younger generation, but they too have reached their present high position through the party. The fact that Zhukov, Vassilevsky, Koniev, Rokossovsky and other marshals and generals who made their names in recent campaigns have not been promoted to cabinet rank is the more eloquent because of Voroshilov's appointment to the post of Vice-Premier and Budenny's election to the permanent Præsidium of the Supreme Soviet. Voroshilov and Budenny are thus the only representatives of the army in the new governmental bodies. Both these marshals made their fame in the Civil War and not in the war against Germany, in which they were regarded as failures. Both represent the citizen soldiery of 1918 to 1921 and not the more modern Officers' Corps, which was indoctrinated with nationalist Russian slogans in 1942 to 1945.

It would, nevertheless, be a gross overstatement to say that their new promotion means a return to the ideas of the early revolutionary period; but the gesture has certainly been calculated to deflate the prestige of the new marshals and the new Officers' Corps. If anybody can represent the army in the political councils, then it is only the old marshals who have the advantage of having made their whole career through, and inside, the party. Their rather modest political ambitions and aspirations can never clash with those of the Party. This pricking of the balloon is most likely to cause resentment among younger officers who have fought and conquered under the orders of Zhukov, Koniev, or Vassilevsky; but they will certainly bear their resentment in silence. In the near future the regime has probably nothing to fear from this side. The verdict of the Supreme Soviet (or, to put it more accurately, of Generalissimo Stalin) has been in favor of the Party, and everybody will submit to that verdict. Its wider political significance lies in the probability that nationalist pride and militarist self-confidence will not color Soviet policy as strongly as they possibly would have done, if the young Officers' Corps had been represented in the government.

Another election which deserves attention and confirms the general trend has been that of Shvernik

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to succeed Kalinin as Chairman of the Præsidium of the Supreme Soviet, that is, President of the Soviet Union. Kalinin represented the continuity of the Bolshevik Party throughout all its metamorphoses and also that shade of its policy which was colored by a strong sympathy for the peasants. His successor, though much younger, also belongs to the Old Guard, and has been active primarily in trade unionism.

The Session of the Supreme Soviet has otherwise been quite exceptionally non-political. It centered entirely on the New Five-Year Plan presented by Vosnesensky. Neither Stalin nor Molotov gave the customary international and domestic reviews. Their reticence may be explained by a reluctance to give any comprehensive statement of Soviet policy at a moment of grave international tension, when definite commitments might tend to fix that policy too rigidly. On the other hand, fragmentary and cautious statements of policy have been made by Generalissimo Stalin in his rejoinders to Mr. Churchill. The serious view taken in Moscow of the international situation is stressed, above all, by the fact that the Generalissimo has decided to remain Premier. Stalin formally took over the leadership of the Government only shortly before the outbreak of the Russo-German war, in a state of national emergency; and the fact that he has not now retired and assumed his previous, almost unofficial, status is probably understood in Russia as a sign that the national emergency has not yet ended.

British Labor Restless

London

• • • **Wage increases** are urgently needed to combat manpower problems in industry, according to a pamphlet on wages, prices, and profits issued by the Labor Research Department. It is claimed that failure to grant necessary and justifiable wage increases is seriously holding up national production and manhour productivity.

The pamphlet says that it is only natural that men who were earning 62¢ an hour in an aircraft factory are unwilling to return to brickwork at 34¢ an hour, or that women who have learned to run an

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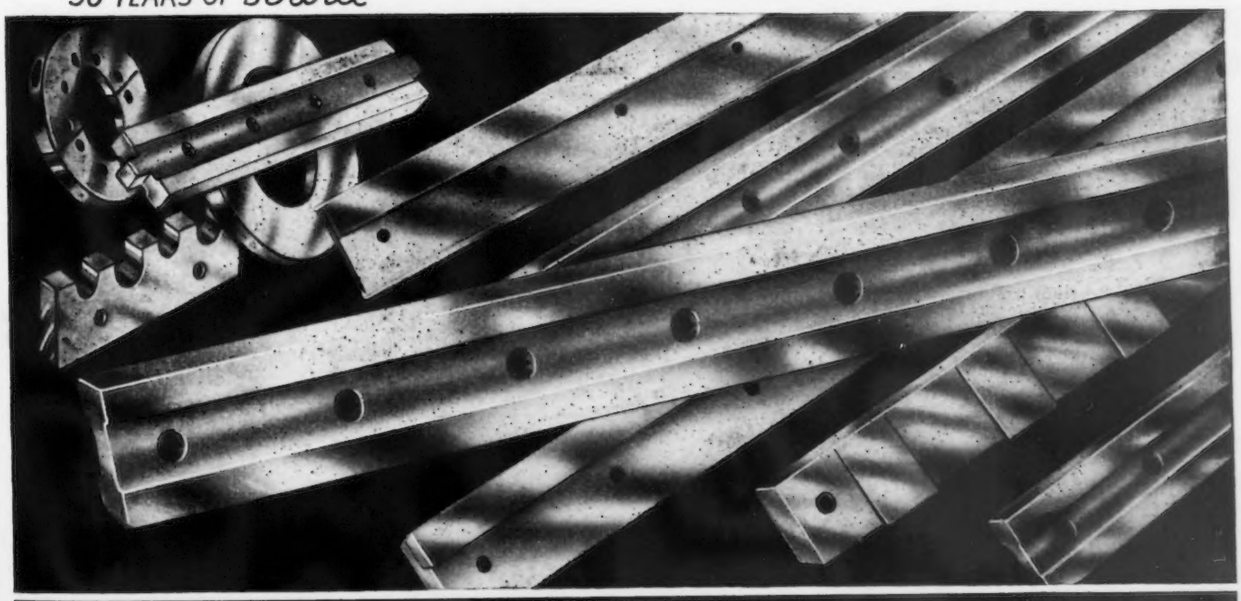

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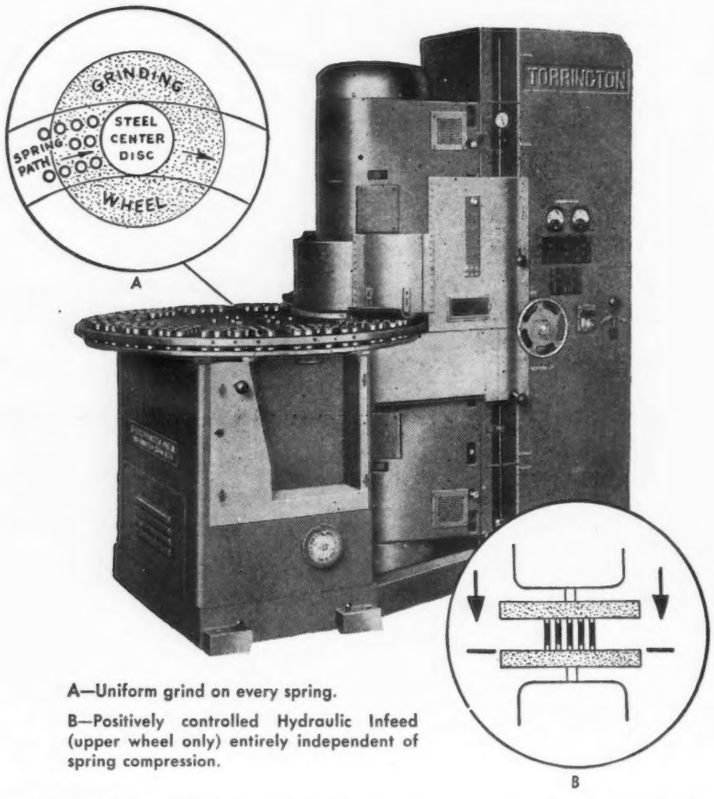

A—Uniform grind on every spring.

B—Positively controlled Hydraulic Infeed (upper wheel only) entirely independent of spring compression.

Multiple Pass Grinding, practical only with the revolutionary new Torrington Spring Grinder, enables spring makers to grind springs to tolerances formerly unheard of, and at higher production speeds than are possible with any other facilities. Multiple pass grinding produces no burning, no burring, no deformation of the spring. The ground surfaces are at true right angles to the axis of the spring. The Torrington Spring Grinder also produces One Pass Grinding and does so at production rates equal to, or greater than, those possible with any other machine.

SPECIFICATIONS

Spring Capacity: Lengths 5/8" to 16"; diameters 1/4" to 7"; wire diameters .040" to .375".

Grinding Wheels: Diameter 24"; maximum usable abrasive 2½".

Grinding Feed: .010" to .100" per minute.

Work Carrier Wheel Speeds: 4 to 16 revolutions per hour, or 1.1 to 4.5 revolutions per minute.

Available Work Carrying Area: (including spring holders) approximately 850 sq in.

THE
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automatic lathe during the war and earned about 40¢ an hour are not eager to work a sewing machine for around 23¢ and may decide to leave industry altogether.

Profits are running high and large reserves have been accumulated, asserts the pamphlet, and wage rates could be raised at once by about 10 pct without producing any effect on the postwar profit totals as estimated. They could be raised by another 15 pct without upsetting the prewar profit totals.

Bethlehem to Set Up West Coast Service

San Francisco

• • • **Full metallurgical** contact and consulting service in the Far West for all the steel products it sells or produces has been announced by Bethlehem Pacific Coast Steel Corp. Recent appointments of specialists from the company's metallurgical department to field work represents a virtual doubling of technical personnel devoted to metallurgical service to the West Coast steel consumers.

Frank C. Smith

Frank C. Smith, metallurgical engineer at the San Francisco general office is in charge of all Pacific Coast metallurgical contact for products produced in Bethlehem plants at Bethlehem, Lebanon, Johnstown, Steelton, Williamsport, Lackawanna and Sparrows Point. Steel from these plants is sold by Bethlehem Pacific, and all metallurgical problems in connection with their application are handled under Mr. Smith's supervision. Assisting him are E. S. Underwood and J. A. Chalk in Los Angeles, A. B. Kreider in Seattle, and C. C. Brumbaugh, wire rope engineer in Portland.

Field and industrial applications of the steels produced at the three Pacific Coast steel mills will be followed by John C. Trawatha of the South San Francisco plant; E. A. Cocanower of the Seattle plant, and George C. Stetter of the Los Angeles plant.

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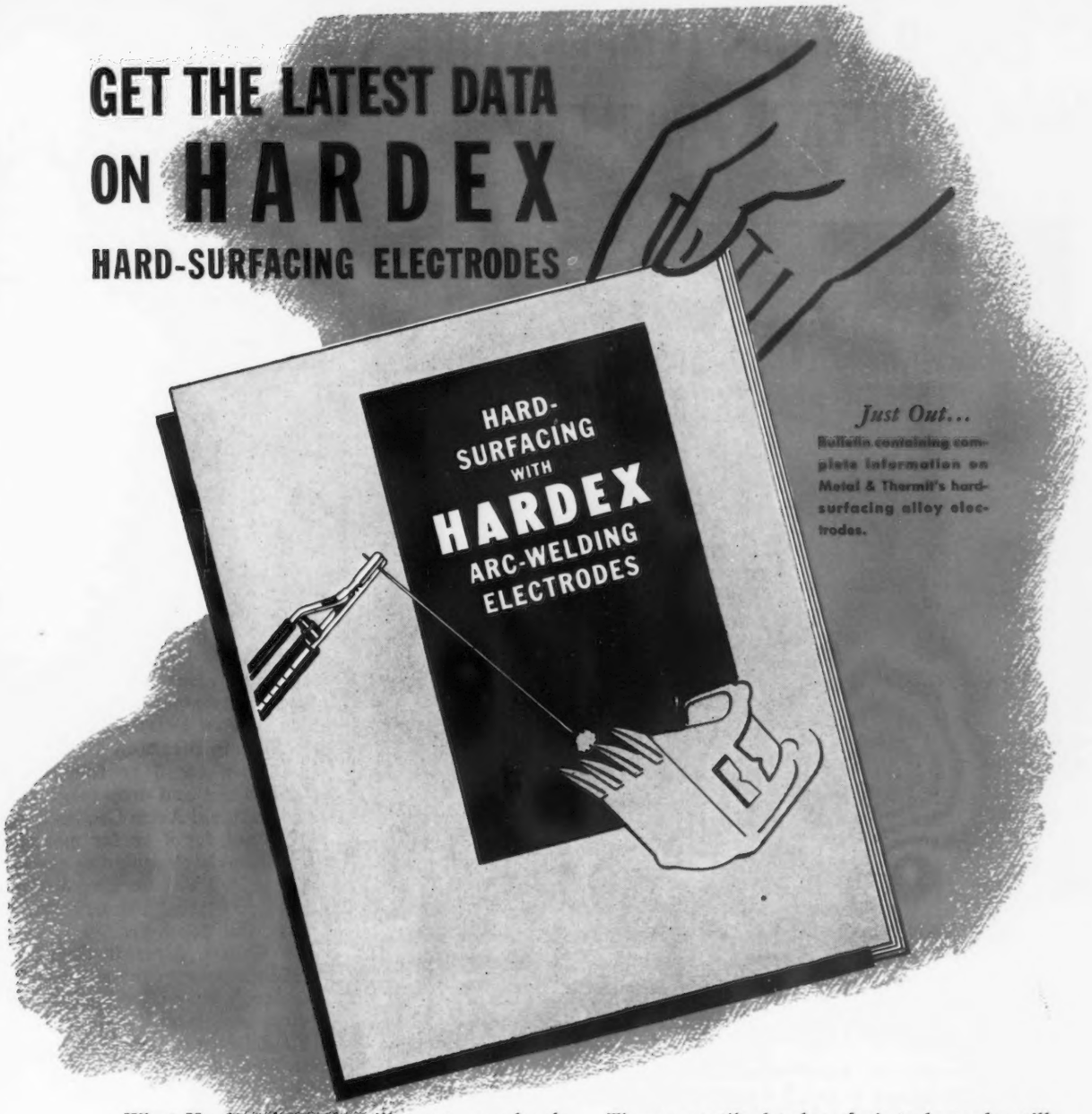

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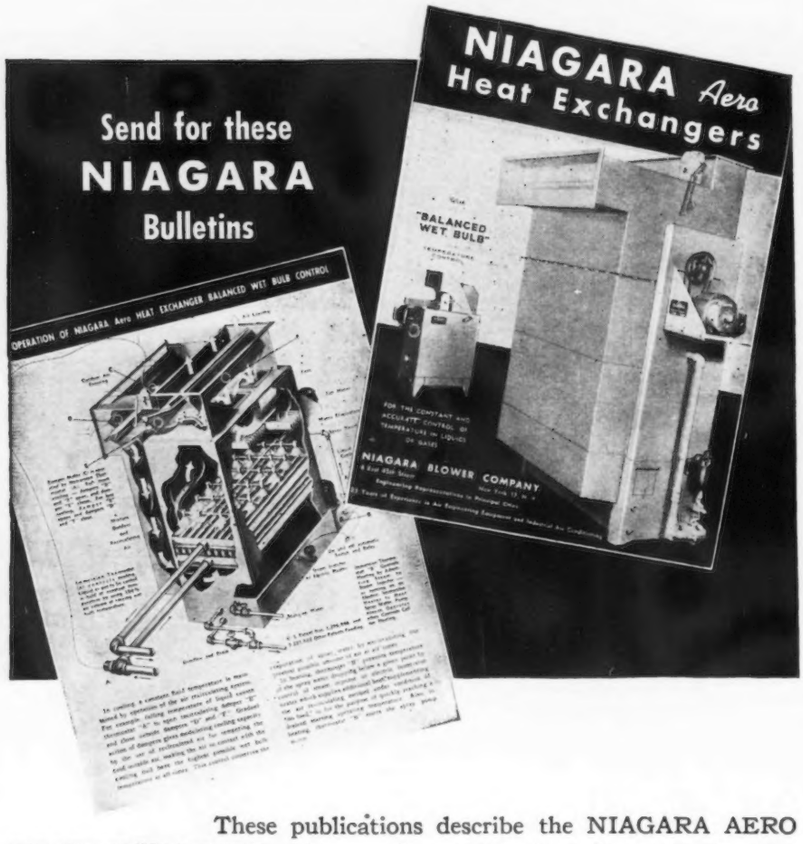

These publications describe the NIAGARA AERO HEAT EXCHANGER and some of its applications. It accurately regulates the temperature of gases and liquids. Industrial plants using chemical and heat-treating processes have gained extra benefits from using this equipment wherever cooling water is used or any fluid is cooled to exact temperatures.

Some of the applications are: controlling temperature of liquid chemicals and intermediates in process; controlling jacket water temperature in power and process equipment; regulating the temperature of controlled atmosphere; controlling liquid bath temperatures.

As a cooler, the NIAGARA AERO HEAT EXCHANGER saves the cost of 95% of the water circulated.

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WAA Leases Facilities To Jack & Heintz, GM, Budd and Many Others

Washington

• • • **Lease for 5 yr** of a series of Ohio wartime facilities to Jack & Heintz, Inc., for production of sleeve valve motors for automobiles and airplanes, bearings and other items, has been announced by WAA. The facilities include Plants Nos. 3 and 4 at Bedford and varied machinery and equipment located in both Bedford and Cleveland. Best information here is that Jack & Heintz, whose wartime payrolls of about 9500 have been reduced to around 1000, expects to employ approximately 7500 workers by early 1947.

Additional government-owned plants leased by WAA for varying periods include:

To Sterling Steel Products Co., for 2 yr, the Delta Chemical Co.'s Baltimore plant for manufacture of specialty steel and wire items.

To Timken Detroit Axle Co., its two forging plants at Detroit and Melvindale for 3 yr for production of upset and drop forgings.

To National Acme Co., its Cleveland plant for 3 yr for manufacture of multiple spindle bars.

To United Engineering & Foundry Co., its steel foundry at New Castle, Pa., for 3 yr.

To Kellett Aircraft Corp., the SKF Industries plant at Lansdale, Pa., for 5 yr. (Previous sale to Kellett was later rescinded).

To Edward G. Budd Mfg. Co., extension of lease on space in the Red Lion and Verree Roads, Pa., aircraft plants from previous expiration in 1949 to May 1951 with option to renew for 5 yr.

Outright sales of government-owned plants include:

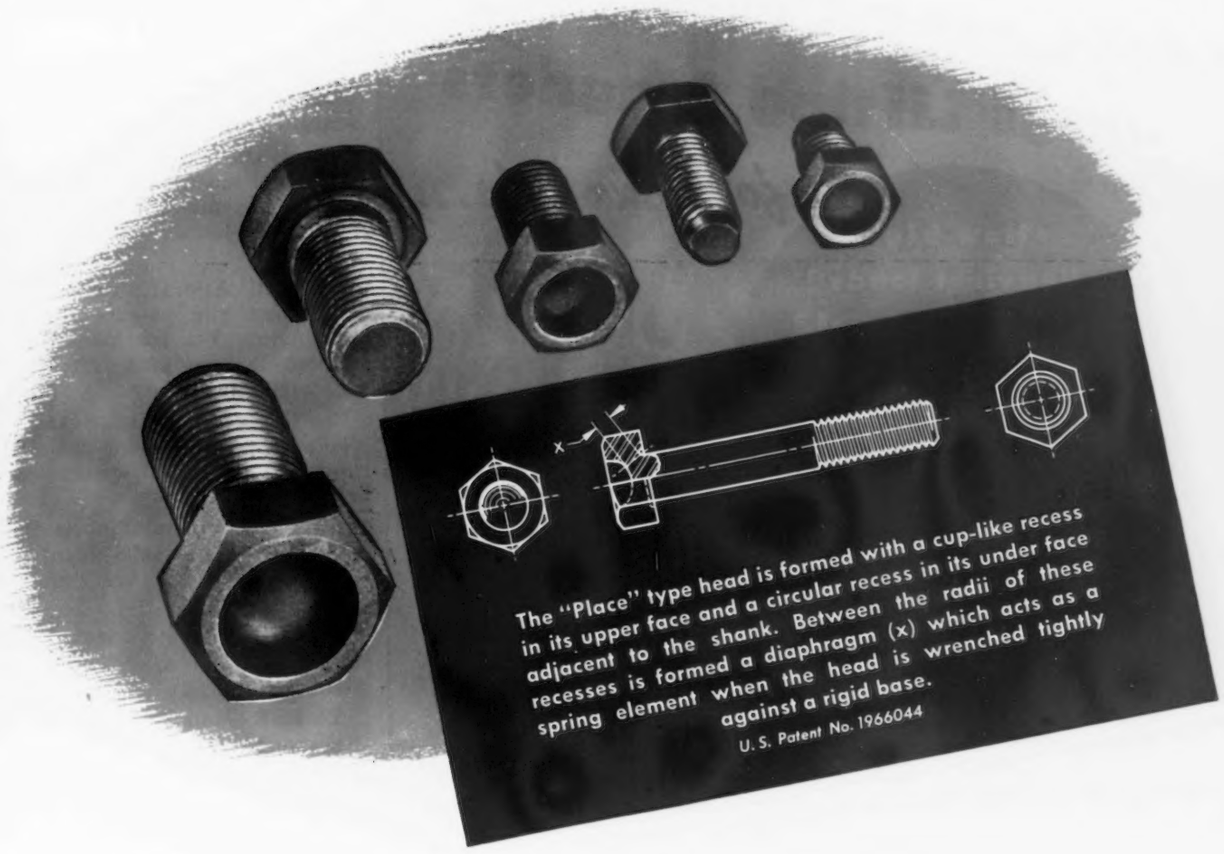
To General Motors, its Bedford, Ind., cylinder head casting and plane engine factory, for operation as a commercial foundry.

To General Electric, its Fort Wayne turbo-supercharger and geared impeller plant, for production of fractional hp motors and magnet wire.

To Lawson Machine & Tool Co., its two Malden, Mass., aircraft parts plants, for manufacture of precision aircraft engine parts.

To GM's Buick Motors Div., its two Flint aluminum aircraft parts plants, for conversion to general manufacturing purposes.

To Oilgear Co., its Milwaukee


The "Place" type head is formed with a cup-like recess in its upper face and a circular recess in its under face adjacent to the shank. Between the radii of these recesses is formed a diaphragm (x) which acts as a spring element when the head is wrenched tightly against a rigid base.
U. S. Patent No. 1966044

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Place bolts are made of alloy steel, heat-treated to high physical properties. They can be furnished in standard cap screw or other bolt dimensions, as well as in special items for specific applications. Write us for detailed information and prices.

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To Servel Co., its Evansville plane wing plant, for manufacture of small air-conditioning units.

To Foote Mineral Co., its Philadelphia lithium salts plant, for commercial metal and mineral treatment.

To GE, its Fitchburg, Mass., auxiliary turbine and assembly plant.

To P. R. Mallory & Co., its Indianapolis dry cell battery plant, for manufacture of batteries and automobile products.

AFA Appoints Consultant

Chicago

• • • **S. C. Massari,** recently awarded the Legion of Merit for his work in the Chicago Ordnance District, has been appointed technical consultant of the American Foundrymen's Assn. In the absence of N. F. Hindle, technical development program director, he is carrying through the program for the association's golden jubilee congress in Cleveland May 6 to 10.

S. C. Massari

Discharged from the army as a lieutenant colonel, Mr. Massari was assistant chief of the District's tank-automotive branch, in charge of production and engineering.

Before entering the army, Mr. Massari was chief metallurgist in charge of research with the Assn. of Manufacturers of Chilled Car Wheels. A member of ASM and ASTM and author of a book on chilled iron, he is widely known in the field of metallurgy.

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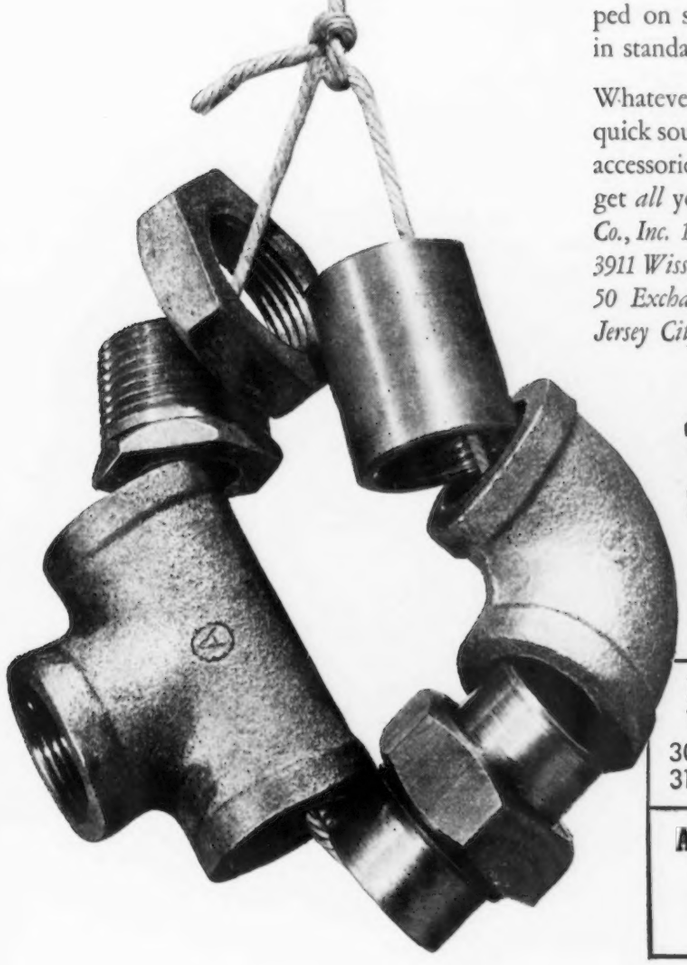

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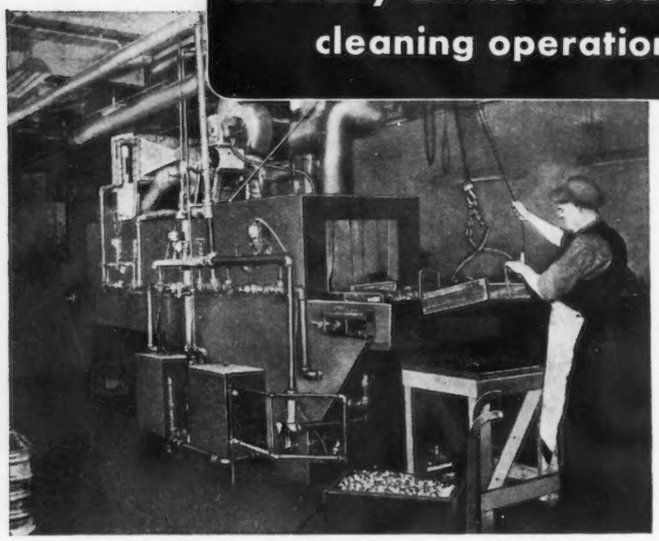

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New Corrosion Report On Soilpipe Issued By Bureau of Standards

Washington

• • • **Estimating an annual** national cost of $200 million in replacement of underground pipe lines made unserviceable by corrosive action of soils, the Bureau of Standards has issued Circular C-450, the result of 25 yr of continuous investigation designed to minimize this economic loss. The circular was prepared by Hirk H. Logan, head of the Underground Corrosion Section.

Soil characteristics and conditions are so complex that it has been found impossible to correlate corrosion with any single soil property, the circular states. Likewise, no one pipe material or protective coating is the best under all soil conditions.

The Bureau's studies indicate that ferrous materials in common use do not differ greatly in resistance to corrosion. However, ferrous alloys containing rather high percentages of nickel and chromium are defintely superior. Copper and alloys with a high copper content corrode much less and more uniformly than ferrous materials. On the other hand, lead is resistant to many soils but pits deeply in some of them.

Corrosion decreases with time and any "corrosion rate" is applicable only to the area of the pipe that was actually tested and to the period in which measurements were made. For this reason the life of a pipe cannot be predicted from loss in weight or depth of a pit as measured during only one period.

The effectiveness of metallic coatings depends on the soils to which they are exposed, according to the circular. No one coating was found to be suitable for all soils. Bituminous coatings greatly retard loss of metal, their effectiveness being roughly proportional to their thickness. Unfortunately, very few of these coatings are free from pin holes and other imperfections.

"In this connection," the Bureau states, "important causes of failure are improper application and injuries received while laying the pipe. Better tools and methods have reduced the failures from these causes, but it is still diffi-

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cult to secure a completely protected pipe. Even after the pipe is in place the coating may be injured by soil stress and the roots of trees, shrubs and grass."

The results of tests on a number of promising coatings developed in the laboratory are presented in the publication. Several procedures for testing soils and coatings also are described and corrosion prevention methods compared.

Cathodic protection is shown to retard or prevent corrosion under most soil conditions. Methods for applying this electric type of protection are briefly described.

Six appendices give details of test methods and apparatus referred to in the text of the publication.

Copies of Circular C-450 may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at $1.25 each.

Military Affairs Committee Reports Stockpiling Bill

Washington

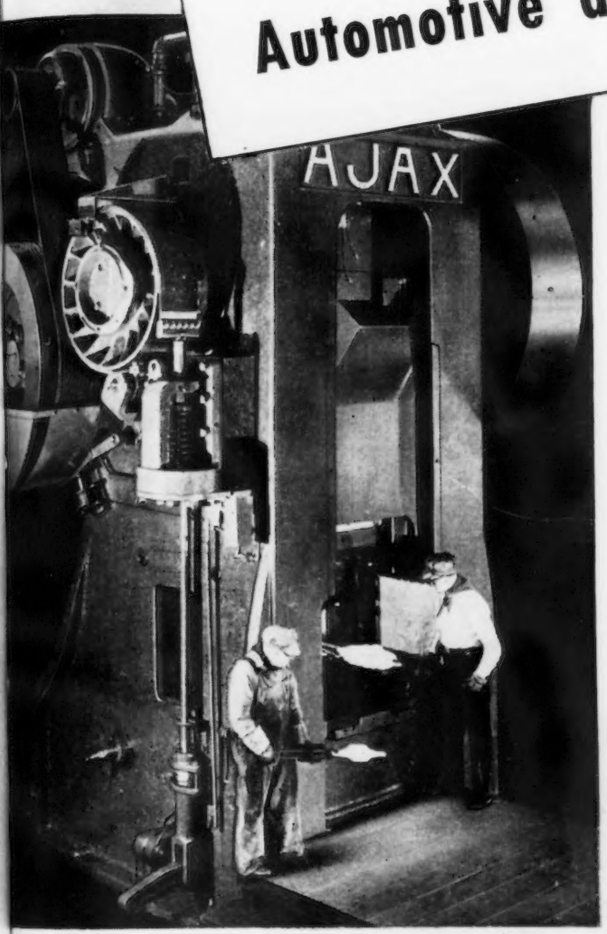
• • • **Provisions establishing** a new agency for its administration and authorizing unlimited appropriations were cut from the May-Thomas Strategic and Critical Materials Stockpiling Act by the House Military Affairs Committee before it approved and reported out the Senate-passed bill.

As sent to the House floor, the measure would leave administration in the hands of the Secretaries of War and Navy as provided in the original Act of 1939. Also, authorization of appropriations would be limited to $1.8 billion with a specific limitation to $360 million in each of the next five years.

Another committee amendment provided that instead of requiring funds received from sales of materials to be turned over to the Treasury that any such receipts be retained for other stockpile purchases and the group deleted the provision which would have permitted duty-free importation of stockpile materials from foreign sources.

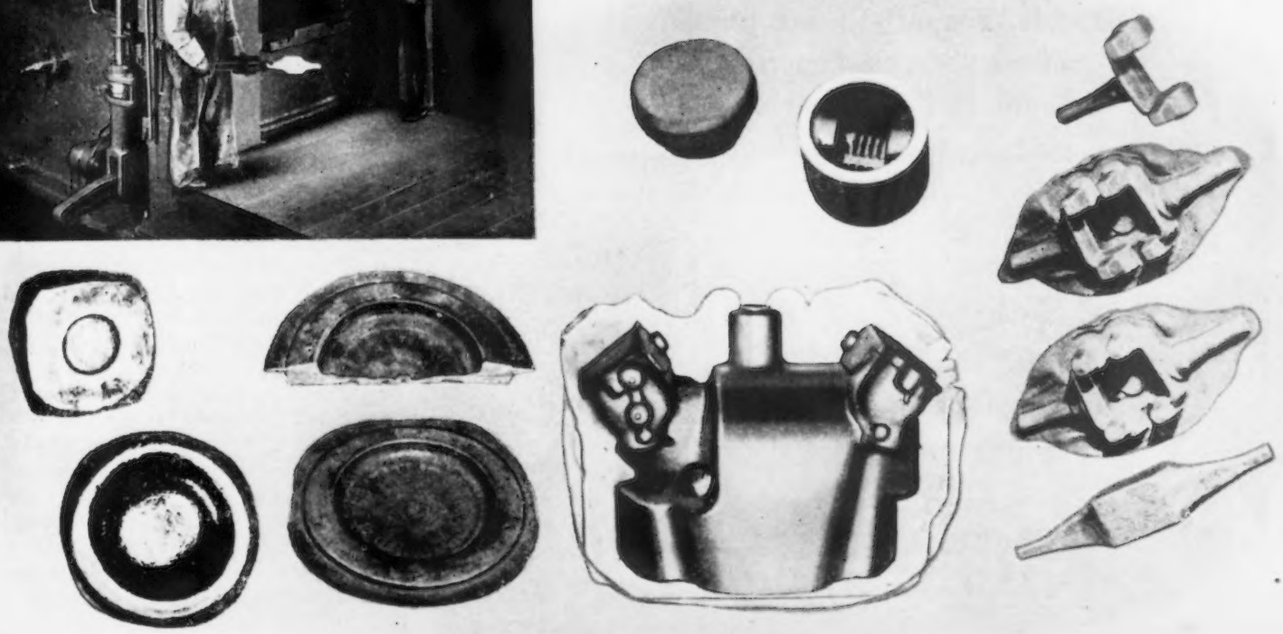
The Senate provision for transfer of surplus government critical and strategic materials to the permanent stockpile was retained, however, as well as the require-

AJAX High Speed Forging Presses So Efficient in the Production of Automotive and Airplane Forgings



AJAX High Speed Forging Presses have proved so advantageous in the production of strong, accurate forgings to meet the unprecedented demands for automotive and airplane forgings, that the field of forgings being produced on these presses is rapidly expanding. Just as steering knuckles, steering knuckle support shafts, ring gears, pistons and even airplane cylinder heads are being forged at high production speeds and low cost, so can a great group of other parts in these and other industries be press forged with the same degree of accuracy and efficiency.

Write for Bulletin No. 75



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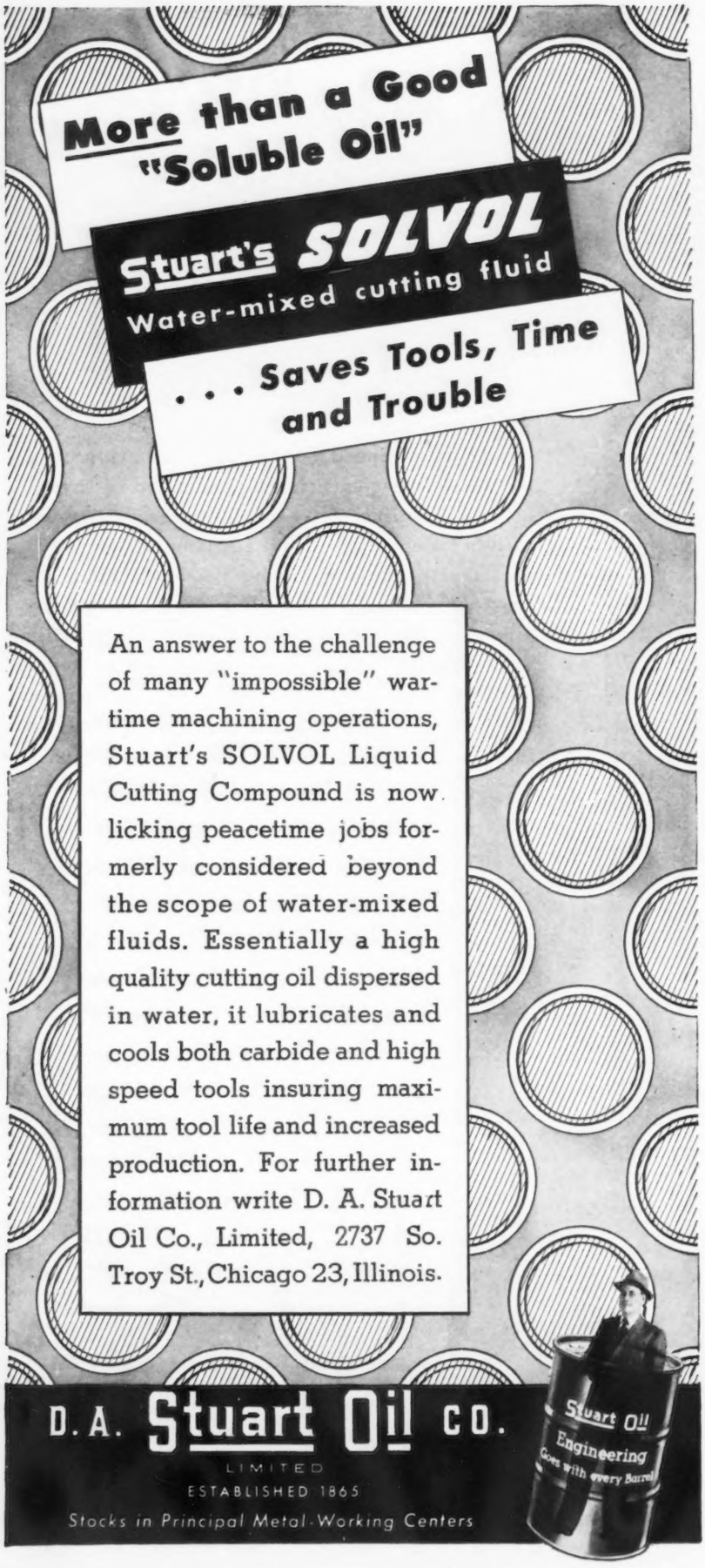
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ment that new purchases shall be made so far as practical from supplies in excess of industrial demand.

In the meantime, in an amendment to SPA Regulation 17, the War Assets Administration extended from Apr. 1 to July 1, 1946, the period for stockpiling materials, minerals and metals needed by the Army and Navy for defense purposes.

Under the basic regulation, stockpiling of surplus strategic or critical minerals other than fabricated items is mandatory; stockpiling of fabricated items is dependent on Army-Navy requirements. There are four exemptions: contractor inventory; reserves equal to civilian deficiencies estimated by CPA; lots less than set minimum quantities; and, valueless items.

Announces Major Disposals

Washington

• • • **WAA has announced** the leasing of additional facilities at the Willow Run plant, Small Parts Bldg. No. 39, to the Kaiser-Frazer Corp. The lease runs until 1951. At the same time, WAA announced the cash sale of the Kaiser-Hughes aircraft plant at Culver City, Calif. (subject to priority rights of Federal agencies), to the Hughes Tool Co. for $856,000. Hughes will manufacture planes.

Other recent major plant disposals include:

Higgins Aircraft, Inc., New Orleans, has been leased for 5 yr to Higgins Industries, Inc., the government reserving mineral rights.

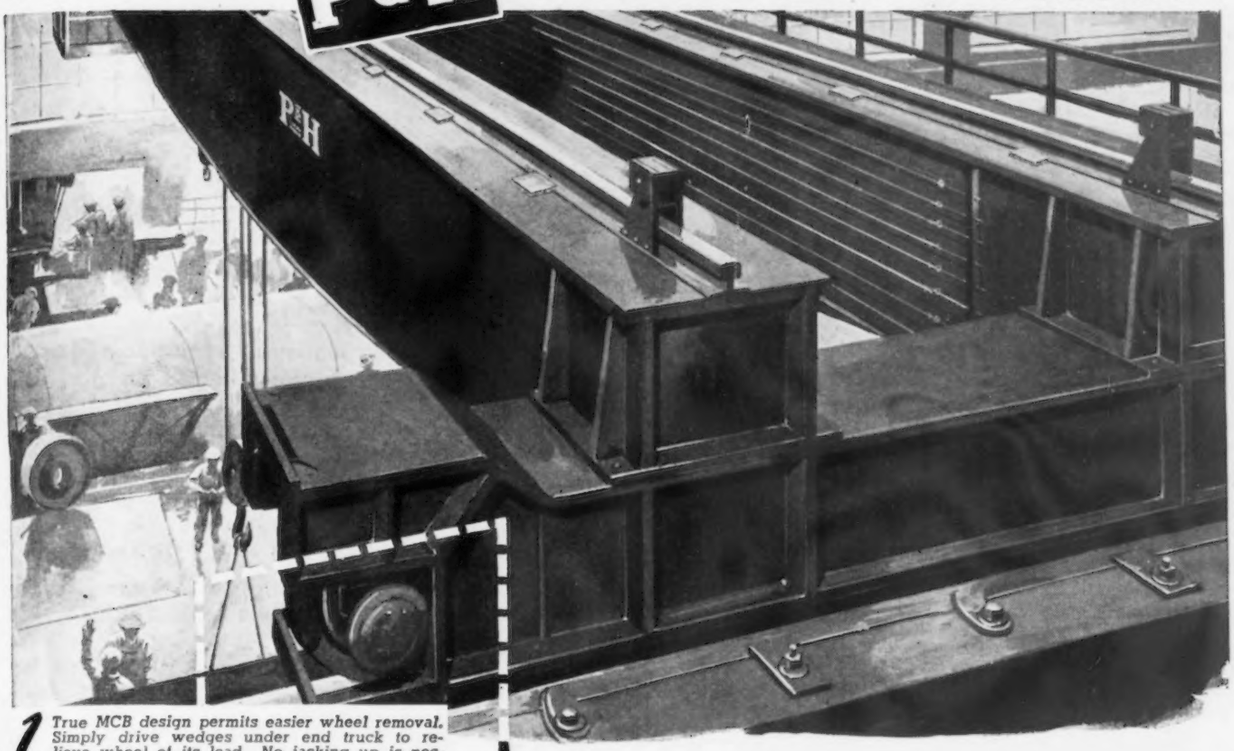
Michigan Steel Casting Co., Detroit, sold to Michigan Casting Co. for $106,106.75.

Two Cleveland Graphite Co. properties, Cleveland, Area No. 1, sold to Bowman Products Co., for $271,816, and Area No. 2 sold to Kromex Corp. for $275,000.

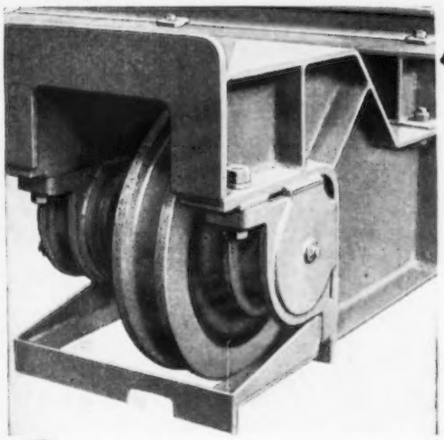
Ohio Crankshaft, Inc., Cleveland, sold to Dobeckman Co. for $500,000.

As of Feb. 28, a total of 174 industrial plants and sites costing $318,826,600 had been sold for $193,884,921. In addition, 66 plants representing an investment of nearly $417 million bad been leased on a commercial basis, not including (as of Feb. 14) 219 plants involving a cost of nearly $740 million which had been let chiefly to their wartime operators on a short-term arrangement.

Another P&H Added Crane Value!



1 *True MCB design permits easier wheel removal. Simply drive wedges under end truck to relieve wheel of its load. No jacking up is necessary.*



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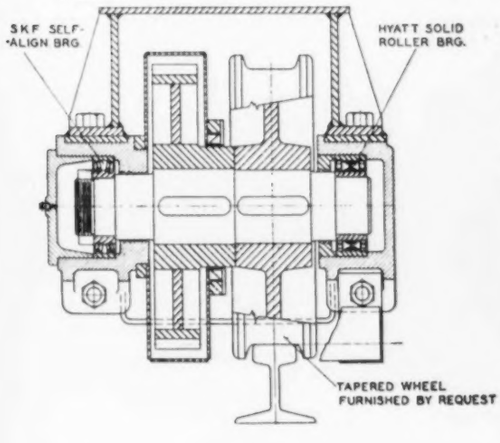
2 *Diagram shows how P&H end trucks provide roller bearings to take both radial and thrust loads, thus eliminating troublesome end thrust washers.*



3 *With double web box construction, P&H's all welded end trucks provide greater lateral stability. Heavy bearing seats, rigidly reinforced, take all impacts from starting and stopping.*

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Hall Laboratories To Study Industrial Waste; C. F. Hauck Heads Dept.

Pittsburgh

• • • **Establishment of a** special department to handle problems of industrial waste and stream pollution has been announced by Dr. R. E. Hall, director of Hall Laboratories, Inc., consultants in conditioning of industrial waters.

The new department will be headed by Charles F. Hauck until recently engineer at Ravenna Ordnance Center and previously, for five years, senior chemist and assistant to the superintendent of Southerly Sewage Treatment Plant, Cleveland.

The program is planned to include a number of features such as:

(1) Study of plant operation to reduce the volume of waste at its sources.

(2) Fact finding studies of the actual amount of deleterious waste discharged and stream contamination.

(3) Development of methods for treating industrial waste economically.

(4) Extension of the regular engineering service of the laboratories to include water and waste leaving the plant, as well as the water entering.

Some of the industries that are concerned with waste disposal problems are steel and nonferrous, food and beverage, textile and tanning, chemical, petroleum-refining, rubber, paper and illuminating gas. These important waste producing industries represent about 75 pct of the total manufacturing activity of the United States, measured in value of product.

Mr. Hauck, for 10 yr has been solving problems of sewage and waste treatment. He points out that public sentiment is increasingly demanding abatement of water pollution whether caused by municipal sewage or industrial or mining wastes. This sentiment has been crystallized by the realization that problems of pollution can be solved; that contaminated water hazardous to human health, costly to industry itself, and damaging to wild life and

recreational activity is not an unavoidable corollary of growing population density and industrial activity.

"While there has been considerable progress in the abatement of municipal pollution, treatment of industrial waste has lagged. It is our purpose to find and apply economical methods of reducing, treating or reclaiming industrial effluents." Mr. Hauck asserted.

Austin Co. Reports Increase in Cost Of Industrial Building

Cleveland

• • • **The Austin Co.'s** index of industrial building costs advanced four points to 136 in the first quarter of 1946, according to George A. Bryant, president.

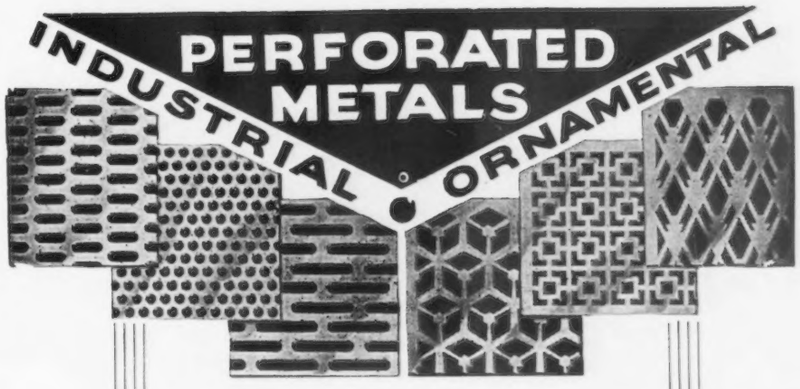
Mr. Bryant pointed out that market increases in material and labor costs have been offset to some extent by a sharp up-turn in efficiency in the field.

"After a period of more than 5 yr during which continuing manpower shortages hampered our efforts to meet record construction demands, we are beginning to see a real improvement in the quality and spirit of men on the job.

"While many of the better qualified construction men are still reluctant to work on any job which does not guarantee them some overtime, most of the industrial firms for whom we are now building are willing to meet this condition in order to attract experienced craftsmen to their plants," Mr. Bryant said.

"While most of the labor difficulties which interrupted production in so many building material and equipment industries are now behind us, unsatisfactory price situations which have made it impossible to operate at a profit are still a problem in some of the supplying industries. It is to be hoped that these situations will be speedily corrected, so that work can move forward in an efficient way," he added.

Mr. Bryant stated that while a majority of the Austin-designed plants now under construction, coast to coast, have proceeded with only nominal delays, final completion in some instances will have to await delivery of electri-



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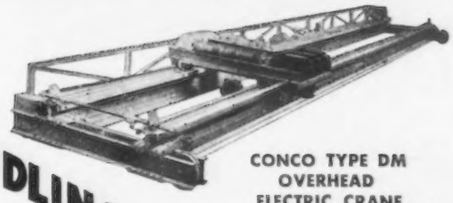

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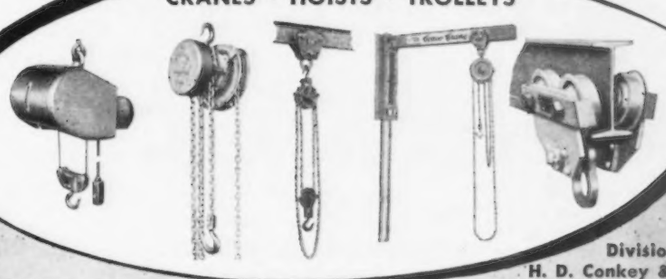

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cal, heating and other special equipment items which are now three to four months behind schedule. The cost of extended supervision and overhead due to such delayed deliveries, overtime labor rates, and other unusual factors are naturally not reflected in the index.

States Wage Increases Threaten Small Firms

Pittsburgh

• • • **The use of** wage increases by large companies to force smaller companies to give similar concessions, the current policy of government, is a serious threat to small business, according to O. C. Cool, director of Labor Relations Institute. Mr. Cool spoke before a dinner meeting of the Smaller Manufacturers' Council, Pittsburgh, on Apr. 4.

He warned that unless such tactics were abandoned quickly, a trend toward monopolies would be created, and he charged OPA with calloused discrimination against smaller manufacturers. OPA officials, Mr. Cool stated, have indicated publicly that OPA cannot assure price relief in advance, yet large companies can get close estimates of what can be expected in the way of price boosts. On the other hand, small manufacturers are expected to operate at a loss for six months or more before price relief is granted. This will force many small operators out of business, leaving the way clear for big companies to step in and take over.

The situation in Pittsburgh, Mr. Cool said, is a forerunner of what is happening in other districts. Small plants were not called in on the 18½¢ an hr wage increase negotiations, but were told by the CIO-USWA to accept the terms of the big steel wage agreement or remain closed.

A survey by the Labor Relations Institute, according to Mr. Cool, indicated that industry is looking towards wage incentive plans to achieve lower production costs. As to unions, he advised employers to exercise their prerogatives to set reasonable production standards and retain the right to discipline employees who do not meet these standards.

Bureau of Reclamation Job Goes to Bethlehem

Washington

• • • **The Bureau of** Reclamation, Dept. of Interior, has awarded a contract to the Bethlehem Pacific Coast Corp., San Francisco, for approximately 450 tons of fabricated structural steel for the Shasta and Keswick power plants in the Central Valley reclamation project, California. Commissioner of Reclamation Michael W. Straus said that the net delivered cost to the government is $75,413.

Crucible Orders New Billet and Bar Mill

Pittsburgh

• • • **Crucible Steel Co.** of America has placed an order with United Engineering & Foundry Co., Pittsburgh, for a six-stand 24-in. billet and bar mill for Crucible Steel's plant at Midland, Pa. The cost of this installation will amount to more than $2,500,000, it was announced.

This mill, with its auxiliary equipment, will roll billets, bars, tube rounds and large rounds up to 8-in. diam. in carbon and alloy steels. The arrangement of the mill incorporates new features not heretofore embodied in mills of this type and will supplement Crucible's existing facilities to permit more efficient production of this company's range of finished and semi-finished products.

Steel's Status to Change

London

• • • **The whole of** the British iron and steel industry will be withdrawn from the Essential Work Order on May 15.

This has been brought about by a Ministry of Labor announcement that the withdrawal of the industry from the Essential Work Order has been widened to cover iron founding, iron and steel tubes, pipes and fittings, and the steel sheets and tinplate section.

It was also announced that the boat-building industry will be withdrawn on or about June 15.

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